

The newswweekly of enterprise network computing

NetworkWorld

WIN 2000
does
COMDEX
Plus, our look
at the lighter
side of the
show. **10.**
PAGE 10.

November 22, 1999 Volume 16, Number 47

The network portal: www.nwfusion.com

THE CRITICAL SHORTAGE OF WOMEN IN IT



"The nation cannot afford to be wasting the talent from half our population."

Kelly Carnes, Commerce Department

The IT industry's inability to attract and retain women at a time when there are 400,000 IT job openings is threatening to become a national crisis. Feature Writer Sharon Gaudin delves into the reasons why the ranks of women in IT are thinning, and describes what can be done to solve the problem. **PAGE 53.**

United takes flight with outsourced Web-mail

Airline to ax client/server messaging system; cites cost savings, scalability benefits.

BY CAROLYN DUFFY MARSAN

COLORADO SPRINGS — The world's largest airline last week announced plans to replace its aging client/server e-mail system with a Web-based service from USA.Net. This groundbreaking deal may presage major changes in how large companies provide e-mail to their workers.

The five-year outsourcing arrangement between United Airlines and USA.Net — hailed as the largest ever — initially involves 20,000 seats but is expected to grow to more

than 100,000 seats as the airline's entire workforce gets wired.

The deal is also certain to catch the attention of established corporate e-mail vendors Microsoft, Lotus and Novell as they continue to further Web-enable their products. See **United**, page 16

www.nwfusion.com

DELIVERING THE MAIL

Research: Info on USA.Net

DocFinder
find it **5638** online

ASP believers offer words of wisdom

BY DENISE PAPPALARDO

Dealing with an application service provider (ASP) is a dicey business when you're used to having total control over your enterprise applications.

But it doesn't have to be that way. Business users who have taken the plunge say you can ease into the world of ASP services without giving up the quality or per-



formance that's critical to your business operations.

The first step is embracing the ASP

model.

"You have to have a great deal of faith when handing over critical parts of your operations to a third party. You have to believe they are going to do it better, faster and stronger than you could do it in-house," says Gant Redmon, director of operations at Authentica, a Waltham, Mass., document security company.

See **ASPs**, page 72

Q3 funding tops \$6B

1999 Q1-Q3 funding \$11.8 billion

1997 & 1998 combined \$8.8 billion

1997 funding \$3.6 billion

1998 funding \$5.2 billion

VC firms heaped money on business-to-business e-comm, 'Net infrastructure firms.

VENTURE CAPITAL SURVEY

BY CAROLYN DUFFY MARSAN

The 'Net Rush of 1999 reached a new level of frenzy over the summer, as investors continued to search for gold in them thar pipes. A PricewaterhouseCoopers/Network World study of venture capital spending released last week found that investments in the network industry topped \$6 billion in the third quarter, smashing all previous quarterly records and

See **Venture capital**, page 18

SOURCE: PRICEWATERHOUSECOOPERS/NETWORK WORLD QUARTERLY VENTURE CAPITAL SURVEY

Venture capital funding of network start-ups

serv**ers**

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THIS WEEK
ONLINE



Water Cooler.
Associate News Editor Michael Cooney is pretty sure that fabled Penn State coach Joe

Paterno never met Sun CEO Scott McNealy. That's because Paterno taught his players not to act like idiots after a victory, a lesson McNealy obviously didn't apply in his remarks last week about Microsoft's legal troubles.

DocFinder: 5648

Keeping Current.

Would you trust your Internet service to davidbowie.com? Fred McClimans takes a



look at the rise of "affinity" ISPs — branded providers that, in fact, don't do any of the actual service provisioning. **DocFinder: 5622**

Forum: Qwest's service woes.

Readers have a lot to say about Senior Editor David Rohde's recent piece on the carrier and its problems. Read their comments, then jump in with yours. **DocFinder: 5647**

Help Desk I. A user is having trouble getting NT workstations to authenticate on his virtual private network. Read his description, then make suggestions. **DocFinder: 5645**

Help Desk II. That same user is also have a problem installing a Remote Access Server on an NT server. When he launches the server, he loses the ability to browse his network neighborhood and then starts having numerous other network problems. Help? **DocFinder: 5646**

DSL Search. Need fast information on digital subscriber line (DSL) technology? Want to find a local provider? Use DSL Search, which indexes the sites of scores of DSL vendors and providers (plus relevant *Network World* articles and columns). **DocFinder: 5331**

Is it that tough? Our online quiz on the best ideas in networking didn't get many perfect scores. Are we in danger of losing all this valuable trivia about the network biz? There's still time to take the quiz, get a perfect score and win a valuable prize — well, OK, some doodad we don't what do to with. Operators are standing by. **DocFinder: 5542**

NetworkWorld

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Focus

FRAME RELAY LINKS

Some carriers shun NNIs in favor of new metro-area services. Page 36.

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The critical shortage of
women
in IT
Page 53.

Reversing the downward spiral in the ranks of female IT workers is critical to solving technology worker shortage.



REVIEW: Tracking the Web in real time

net.Genesis' net.Analysis and Andromedia's Andromedia raise the bar for high-end Web traffic analysis, but fall short when it comes to administration. Page 57

COOL TOOLS: Imaginet's iNetPhone promises low rates wherever you go. Page 60

NEWS BRIEFS, NOVEMBER 22, 1999

MCI WorldCom, Sprint to regulators: Hey, we're not that big

MCI WorldCom and Sprint last week laid out new talking points for getting merger approval past skeptical federal regulators: "We're not the No. 2 and No. 3 U.S. carriers after all." In their official merger filing with the U.S. Department of Justice and the Federal Communications Commission, the two companies made the case that they are really the fourth- and seventh-largest U.S. carriers when you include the regional Bell operating companies. And even after their merger, the pair would still only be the fourth largest, behind AT&T, SBC Communications and the proposed combination of Bell Atlantic and GTE, still under review by the regulators.

MCI and Sprint officials also say the combination of the two companies' wireless licenses and Internet-access offerings could result in a consumer wireless Internet competitor to cable modems and digital subscriber line.

Token-ring committee lives

Despite speculation to the contrary, the IEEE 802.5 committee that oversees token-ring standards will not go into hibernation because of low attendance. The committee was slated to consider such a move at its recent session in Hawaii, which caused consternation for a few members.

However, the 802.5 committee, with members from Madge, IBM, Cisco and LAN Ventures, voted to continue active work on ongoing projects.

NT Service Pack in the shop

Microsoft took yet another blow to the chin last week with the discovery of significant problems in Service Pack 6 for Windows NT. Two major errors were found in the release that was made available Oct. 28. One problem left those who installed Service Pack 6 without access to Lotus Notes unless they were signed on as an administrator.

Microsoft issued a fix last week. The other problem prevented some applications from connecting to NT via Winsock unless they had administrative rights. The problem affected a patch issued Oct. 22 to fix another problem. Microsoft is expected to issue a patch to the patch this week.

**American Express to play portal card**

American Express last week jumped into the business-to-business trading portal game, announcing it will build a site based on the TRADEX Technologies e-commerce software for purchasing and catalog management. American Express will also team with ec-Content, which manages a database of more than five million maintenance, repair and operation items that businesses may want to use to create customized catalogs. American Express offered no firm date for the site launch or names of customers committed to using it.

In the court of public opinion, Microsoft wins

The Department of Justice and U.S. District Court Judge Thomas Penfield Jackson may not have very high opinions of Microsoft, but the same cannot be said of the public, at least according to a new survey released by Harris Interactive and a private research organization called the Reputation Institute.

The survey ranks 40 top technology companies in descending order of their perceived "reputation" among those who participated in the poll. Microsoft tops the list, followed by Intel, Sony, Dell, Lucent and Gateway. Bringing up the rear is America Online.

**The ACLU appeals surveillance ruling by FCC**

The American Civil Liberties Union (ACLU) and the Electronic Privacy Information Center (EPIC) last week went to the federal appeals court in Washington, D.C., to block the FBI from gaining broader electronic surveillance abilities and technical control over telecommunications design. The agency recently was granted these abilities by the Federal Communications Commission.

The FCC had arbitrated the bitter dispute between the telecom industry and the FBI that has its roots in an older law called the Communications and Law Enforcement Act. David Sobel, EPIC's general counsel, says the civil liberties groups contend that the FCC resolved the dispute in favor of the "police powers and against privacy."

The legal case launched by the ACLU and EPIC seeks to define privacy standards for cellular services and the Internet as well as traditional telecommunications, Sobel says.

Qwest to use optics to speed provisioning

BY DAVID ROHDE

DENVER — Qwest says it will soon install new optical equipment in its network that will make it easier to get user circuits up and running.

The national broadband carrier today will announce that it will install a variety of transport and switching systems based on optical wavelengths rather than traditional electronic regeneration of signals.

The equipment will let Qwest reduce the number of hops, or regeneration points, on a cross-country circuit

The equipment will be installed in Qwest facilities in 25 major metropolitan areas, says Ron Haigh, senior optical architect for Qwest. The new transport and switching system will be installed on additional fibers along Qwest routes; already-lit fibers will retain their existing electronics.

Qwest maintains 48 fiber pairs along its broadband network, and under the new plan the company will in essence have two networks — the electronics-based network along some of the fibers and the optical-based network

Choosing among vendors

Qwest says it will consider using optical network equipment from the following vendors:

Established players:

- Cisco
- Juniper Networks
- Lucent
- Nortel Networks

Start-ups:

- Cerent (recently acquired by Cisco)
- Ccrvis
- Qtera
- Siara Systems

from as many as 30 to as few as two. The plan will be implemented starting next year.

The reduction in hops will, in turn, reduce the amount of time it takes Qwest to provision new user circuits on its backbone network. Qwest installation times have been slipping as customer sales of voice and data services have frequently surpassed the carrier's ability to light new fiber pairs along the firm's 18,500-route-mile national network (NW, Nov. 8, page 1).

A choice to make

The new equipment will be chosen from among a variety of vendors (see graphic). They will provide add/drop multiplexers, digital cross-connects, and packet and cell switching over pure optics, which can carry signals farther down the line, and add, drop or reroute circuits in a matter of minutes rather than days.

along others.

Haigh concedes that the reduction in installation time only affects the backbone portion of a user's circuit, not the local loop or back-office operations. As a result, he and other Qwest officials could not quantify the exact reduction in installation intervals that users will enjoy.

Haigh also says that some of the products Qwest is considering using are still in the development stage, and in the end the carrier may not use all of the vendors it will specify in today's announcement.

Qwest's move to an all-optical portion of the network is an attempt by the carrier to stay ahead of the crowd, says Afshin Mohebbi, Qwest president and chief operating officer.

Beginning in 1997, Qwest was the first to install OC-192 (10G bit/sec) transport capacity in its network construction, a goal other carriers are still trying to achieve. ■

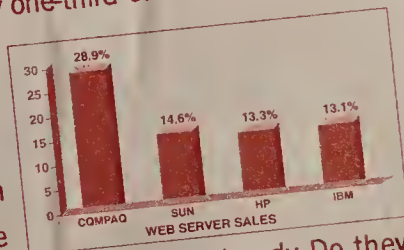
GEE. IF IBM MERGED WITH SUN, THEY'D STILL BE #2.

Hmm. More businesses run Web servers from Compaq than from the two biggest talkers in the industry combined. That's approximately one-third of the entire Internet.

And it's so many, according to the newest data from InfoBeads.com, the real battle is no longer for supremacy, but who can emerge in the #2 spot. Maybe there's a connection. Maybe the real conclusion

to be drawn is that whatever e-challenge you take on, chances are there's a Compaq server handling it gracefully already. Do they

give out ribbons for that sort of thing? For more, visit www.compaq.com/NonStop.



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AM radio creates ADSL static

AM signals can cause a dramatic drop in download speeds.

BY TIM GREENE

Now there's one more reason to hate AM radio: It cuts the bandwidth on asymmetric digital subscriber lines (ADSL).

Equipment maker Nortel Networks claims interference from AM stations can slash high-speed bandwidth by 40%, and that the problem arises on approximately 15% of ADSLs.

While service providers say there are more significant problems in real-world ADSL deployments, the International Telecommunications Union is considering requiring ADSL modem makers to test how well their gear deals with AM interference. Customers could then look at the results to compare one ADSL modem with another.

Several causes cited

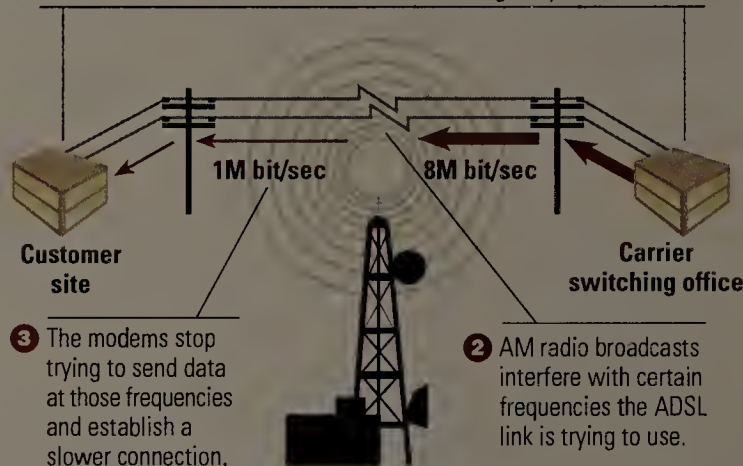
The AM radio interference problem varies from place to place, depending on a number of factors, including how close ADSL lines are to AM broadcast antennas and the quality of the inside wiring at customer sites.

BellSouth says customers at the end of very long ADSL lines, where the signal is weak

AM radio is no friend to ADSL

Depending on how close the broadcast towers are and how many are in the area, AM radio signals can choke back ADSL speeds.

1 ADSL modems in carrier switching offices and at customer sites try to establish an 8M bit/sec download link over a regular phone line.



anyway, and who happen to be near an AM radio transmitter, have been unable to get ADSL service at all.

The problem is worse if untwisted or poorly twisted wiring is part of the connection, a common problem with wiring in homes. Twisted wiring tends to protect the ADSL signal.

While the AM radio frequencies interfere with ADSL download speeds, they do not affect upload speeds. And AM radio does not affect all types

of DSL, only ADSL and its subsets. These include rate adaptive DSL, which has adjustable speeds, and G.lite, which has a maximum download speed of 1.5M bit/sec.

Wayne Getchell, director of access products for Nortel Networks, says AM radio interference is a relatively minor problem when compared with other issues, such as the length of DSL lines, whether other lines run off customers' lines and even poorly attached wires.

Chip Ach, chief technology officer for DSL provider HarvardNet, says his company has not identified AM radio as a problem in its deployment of 700 DSL lines. "When you start with 8M bit/sec downstream, dropping a little bit on that side, especially when trying to provide asymmetric service as we are, is not a big deal. I worry much more about upstream bandwidth being compromised, which is not the case here," Ach says.

A spokesman for BellSouth says in the cases in which the carrier has diagnosed AM radio as a problem, the impact was severe.

In at least one case, the interference made ADSL ser-

vice impossible. But the company says less severe degradation may go unnoticed or be attributed to other factors. BellSouth offers ADSL as a best-effort service, so the carrier does not doggedly track down every factor that might affect the bandwidth of individual lines.

Nortel Networks says it has ways to blunt the effects of AM radio interference. In full-rate ADSL, the company's modems can stop using frequencies where the radio waves cause interference.

With G.lite, also known as DSL-Lite, Nortel Networks is working on chips for customer-end modems that can filter out some of the AM waves to eliminate the disruption they cause, Getchell says. ■



The Scoop

The news behind the news

WHY ADSL AND AM RADIO ARE AT ODDS

AM radio interferes with ADSL because they try to use the same electromagnetic frequencies at the same time.

The nearly 5,000 AM radio stations licensed in the U.S. broadcast at frequencies between 540 KHz and 1.7 MHz. ADSL service providers use the 138-KHz to 1.1-MHz range to download data to customers.

So as you can see, there's a sizable overlap.

It would seem that AM radio would wipe out most of the ADSL range, but because stations transmit at discrete frequencies, each station affects just a targeted area of the ADSL spectrum. AM stations in a given area don't generally fill up the entire available spectrum.

ADSL modems have the ability to just stop using that segment of the frequency spectrum occupied by any nearby AM station. ADSL transmissions are broken into frequency chunks called "carriers." There are 256 carriers per ADSL line and 128 per line for G.lite, a lower-speed version of ADSL. When an AM signal interferes with a carrier, one remedy is to stop using that carrier and to drop the bandwidth available to carry data.

Only the download speed is affected, and that's because the frequencies used to send data to customers are the ones that overlap with AM radio.

The longer the wire to the customer site, the more susceptible an ADSL line is to interference. That is because the signal gets weaker as it travels down the wires and is therefore more easily disrupted. The effect is particularly pronounced if the AM transmitter is near the customer at the end of a long line.

Twisting wires around each other makes the signal on them less sensitive to interference, and phone companies use twisted pairs of wire to reach customers.

— Tim Greene

FCC RULING MEANS CHEAP DSL

Start looking forward to lower DSL prices and faster installation times.

The Federal Communications Commission says that established local phone companies must allow competitors to sell DSL services on the same phone lines that the local carriers are using to carry voice services — a procedure called line sharing.

The ruling, issued last week, means competitive carriers will no longer have to wait to get separate lines installed. That translates into services getting turned up faster.

The ruling also means the competitive carriers won't have to lease entire separate lines. "That's money we can pass on to our customers," says Chip Ach, chief technology officer for DSL provider HarvardNet.

In addition, installation fees will drop. If a new line has to be installed, the established local

phone company has to send a technician to the house. That cost, which can be hundreds of dollars, gets passed on to customers.

The competitive carriers have complained that regional Bell operating companies (RBOCs), which own the bulk of local phone lines in the U.S., overcharge them for leasing local loops.

Those fees range from \$3 to \$40 per month, says Michael Olson, deputy general counsel for DSL provider NorthPoint. The FCC says RBOCs can't charge competitors more than their own subsidiaries that sell DSL via line sharing. RBOC filings with the FCC indicate there is no additional cost to them to use the phone wires to also carry DSL.

States will set the actual prices competitors will pay.

— Tim Greene

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$$N_8 \leq N_2 \left(\frac{s+\log N-2}{s-1} \right) C_{+1}^5 \left(\frac{s+K}{s-1} \right)$$
$$N^2 \left(\frac{s+\log N-2}{s-1} \right) C_{+1}^5 \left(\frac{s+K}{s-1} \right) K^{-(s+1)}$$
$$N^2 2^{8+} \dots C_{+1}^5 \left(\frac{s+K}{s-1} \right)^{s+1} + 1 K^{s+1}$$

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Delivering a Better Internet

Microsoft partners reveal Win 2000 exploits

BY JOHN FONTANA

LAS VEGAS — With Microsoft confident it has nearly nailed down final code for Windows 2000, the company is now setting out to prove the operating system's worth.



Microsoft got help last week from partners in the Joint Development Program (JDP). These partners used Comdex/Fall '99 to begin detailing their exploits with the operating system, which is due to ship Feb. 17. Microsoft shipped Release Candidate 3 of the beta last week, which, barring disaster, should be the last one before final release.

The experiences of Microsoft's JDP partners are likely to give IT executives clues into the strengths and weaknesses of Win 2000 and Active

Directory.

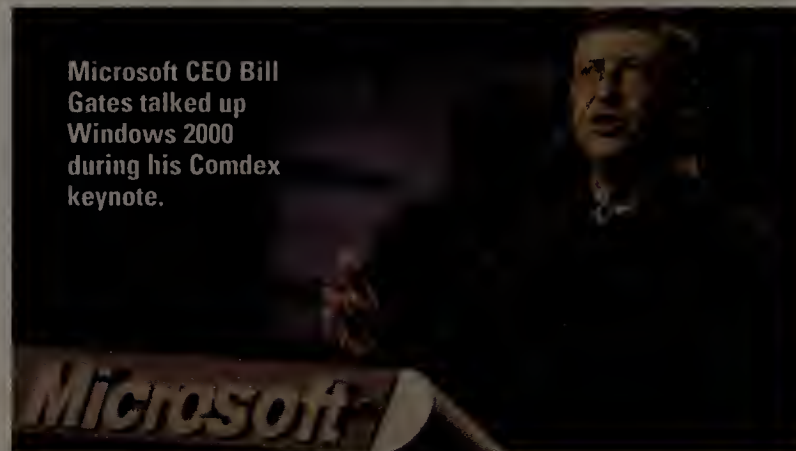
Prudential Insurance, a JDP partner, is running about 500,000 objects in Active Directory as part of a pilot for policy management of 12,000 laptops that agents use in the field.

"We are confident we can go to a million objects," says Laura Gashlin, systems director for emerging technologies at Prudential Insurance in Newark, N.J. "Right now, the directory is running very well."

But Gashlin adds it took 15 months to achieve that result.

"This is not a two-month project. Active Directory has been very complex," says Gashlin, who plans to err on the side of caution when her deployment goes live. "We will start with parallel environments, Active Directory and multiple NT domains."

Compaq, a close Microsoft ally and JDP member, demonstrated at Comdex its testing of Active Directory by loading some 110 million objects into the directory. Using the



Microsoft CEO Bill Gates talked up Windows 2000 during his Comdex keynote.

Lightweight Directory Access Protocol import utility, Compaq loaded phone book data at a rate of 1,000 entries per second. Directory reads were between 4,000 and 5,000 per second on an eight-way Xeon machine. The data also was being replicated over a 25-mile link.

"In terms of scale, we think even the largest companies will be pressed to reach 10 million objects," says Jeff Dunkelberger, a senior consultant in Compaq's professional services division.

In contrast, Novell, which

made its own directory splash at the show by uncoupling Novell Directory Services (NDS) from NetWare and offering it natively on NT and Solaris, can hold more than one billion objects in NDS.

"Will someone put a billion objects in the directory tomorrow? No. But we need to take the fear of limits off the table as companies start to use the directory to do business with partners across the Internet," says Sam DiStasio, a Novell marketing executive. ■

CHRIS FARMANING



Reporter's Notebook

SEEN AND HEARD AT COMDEX/FALL '99

Tell me what you want

National Semiconductor drew big crowds with near constant performances from "The Device Girls," a campy ripoff of the Spice Girls. A representative from a nearby booth was overheard complaining about the lack of attention his booth was getting when the clones began to sing.

Linux in vogue

Linux father Linus Torvalds was seemingly everywhere. His keynote and various Q&A sessions were regularly broadcast on not just one, but two full-time TV channels devoted to Comdex. Wearing shorts, glasses, tall white socks and sandals, Linus clearly goes his own way when it comes to fashion.

Silent revenge of the nerds

A collection of mimes dressed in lab coats and black-rimmed glasses stalked attendees at the Silicon Northwest gathering, a show within a show at Comdex. The mimes' Keystone Cops bit included group hugs for attendees and mocking gestures for anyone who dared challenge their antics. The mimes, representing ISP NetZero, not only added a bit of levity but were seen making a number of silent but deadly attacks on the buffet.

Live from Comdex, it's . . .

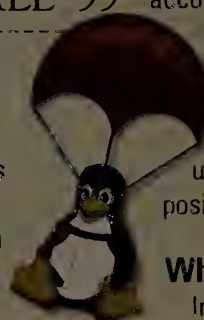
Saturday Night Live alums Kevin Nealon and Dana Carvey lent a funny bone in more ways than one to Novell CEO Eric Schmidt's

keynote. While their skits, which revived old SNL bits, were humorous, a malfunctioning TelePrompTer kept the comedians from making their points, which were supposed to accompany Schmidt's address. Nealon, however, was able to get off this zinger about possible punishments for Bill Gates in Microsoft's antitrust case: "Write 1,000 times, 'I'm sorry' in Java; use a PalmPilot for a week . . . as a suppository; explain Windows 98 to Mike Tyson."

Who said Penguins can't fly?

In what will likely get top billing in the history book of Comdex stunts, a trio of skydivers dressed like penguins literally dropped in on the show last week to promote Linux. TurboLinux sponsored the jump into the parking lot at the Las Vegas Hilton as a way to highlight its TurboCluster product and introduce CEO Cliff Miller, who then flapped his wings about Linux, open source and the enterprise.

— By Doug Barney and John Fontana



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Oracle shedding its skin for the 'Net

BY JOHN COX

Last week's annual Oracle OpenWorld '99 conference showed a company that's racing to change itself as the Internet changes Oracle's customers.

For the past 18 months, Oracle has been shifting its message. It's no longer a database company; rather, it's the company whose software "powers the Internet."

As proof, the company points to top consumer Web sites, such as Amazon.com, that rely on the Oracle database and related products to support buying and selling over the Internet.

Jeremy Burton, Oracle's vice president of Internet platform marketing, claims that some venture capitalists now refuse to fund Internet start-ups unless Oracle software is part of the start-ups' business plans.

But the reality is a bit more

complex, as shown by Oracle's numbers for the past five fiscal quarters. Gains have been steady, and in some quarters, remarkable.

And Oracle's most important product — Oracle8i — is doing well.

Oracle says 5,000 8i licenses have been sold since the product was released last spring. However, what's not clear is the rate of migration from earlier Oracle versions to 8i. And Oracle officials, from CEO Larry Ellison on down, won't be specific about migration figures.

But Burton says that in a recent Oracle survey of 3,600 companies, 845 said they planned to deploy 8i within three months, and another 1,500 planned to do so within a year. About one-third of all respondents cited Java (which is supported in 8i along with Oracle's Jdeveloper tool set) as the main reason for moving to 8i.

But many customers still rate traditional concerns such as scalability and reliability far above any grandiose concepts that Oracle might have.

"I looked at Windows NT and Microsoft SQL Server on NT and concluded that NT will never scale, at least in my lifetime," says Max Gano, director of technologies at Onvia.com, a start-up that

provides small companies with a variety of online business and operational services. "You need an operating system and database that can scale in a high-availability environment. That is much more mature with the Sun Solaris-Oracle combination. I can't take chances."

Many Oracle Applications users take a similar tack.

Oracle Applications is a package of customer relationship management and back-end business and financial applications designed to work together through the Oracle database.

But that's not why Specialized Bicycle Components in Morgan City, Calif., ended up using Oracle for its e-commerce launch. The \$200 million-per-year company, which despite the name, builds bicycles and sells them through a nationwide net-

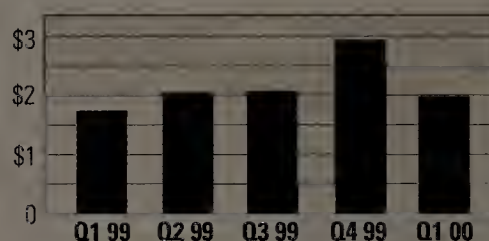
See **Oracle**, page 14

ANALYSIS

Will Oracle's Internet plan pay off?

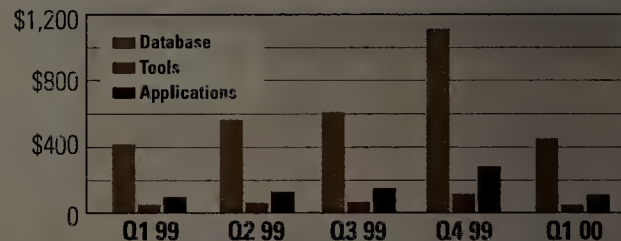
Oracle is working to persuade customers to think of e-commerce and Oracle software as one and the same. Fiscal '99 revenue showed steady, and in some cases startling, increases. Oracle execs are telling Wall Street that a 15% to 20% growth rate in database licenses is sustainable.

Oracle revenue (in billions)



Note: Oracle's fiscal year ends in May.

License revenue breakdown (in thousands)



SOURCES: HOOVER'S.COM; ORACLE

HP revamps workgroup and departmental servers

LC 2000 and LH 3000 systems offer additional management tools, higher performance, availability.

BY APRIL JACOBS

PALO ALTO — Hewlett-Packard has revamped its workgroup and departmental Net-Server family to deliver redundancy, supply on-board remote management tools and offer hardware that's easy to service and upgrade.

The LC 2000 is aimed at small workgroups and remote

locations where IS support is limited. The LH 3000 is targeted at larger departments, where space may be limited, and server expandability and upgradeability are serious considerations. The LC 2000 and LH 3000 are intended to be significant upgrades from the 2-year-old LC 3 and LH 3 models they replace.

The LH 3000's storage capacity is 216G bytes, while the LC 2000 handles up to 144G bytes. The LH 3000 features 12 hot-swappable bays compared with the LC 2000's six bays.

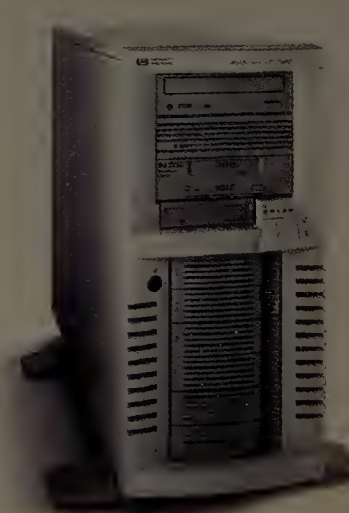
Both servers ship with TopTools, HP's system management tool. For about \$500 extra, customers can purchase a remote control card that gives them browser-based access to the server for remote configuration changes and troubleshooting. Both boxes feature 133-MHz front-side system buses, dual processors

running up to 733 MHz and screwdriver-free, color-coded components for easy service. The LH 3000 has 12 hot-swappable disks, 4G bytes of memory and two embedded SCSI controllers.

At Astoria Federal Savings and Loan Association, a \$23 billion bank with more than 700,000 customers and 3,000 employees, the LC 2000 is being tested for use with a mortgage origination and loan application, as well as for future use as a branch server.

"The LC 2000 is a real workhorse that can accommodate the tremendous amount of growth that we have," says Joe Sciortino, first assistant, vice president and senior manager of support services at Astoria.

"We also like the fact that we can have a server with reporting capabilities for performance and hardware health," he says, adding that a test of



... while the LC 2000 targets remote locations and small groups with limited IS support.

HP's disaster recovery feature allowed a server to be rebuilt in seven minutes.

At KLA-Tencor, the LH 3000 is being targeted at Microsoft Exchange and SQL Server applications. Patrick Shaw, manager of server and desktop technology groups at KLA-Tencor, says significant perfor-

mance and availability improvements are making the server a logical choice.

"With more redundant systems and remote manageability, we are a step closer to the 24-7 environment we need for mission-critical applications," he says.

Shaw also noted that HP's promise to offer a plug-in upgrade to Intel's latest four-way Xeon offering next year is another plus because he always considers hardware upgradeability when purchasing midrange servers.

"HP is really serving the need businesses have to service their own systems. The fact that they have a tool-less ease of use is very appealing to customers, and with future expandability options, they can hold onto the hardware a lot longer," says Sarah Manchester, an analyst with International Data Corp. in Framingham, Mass.

Pricing starts at \$2,500 for the LC 2000 and \$4,275 for the LH 3000. Both servers will ship in volume in the first quarter of 2000.

HP: www.hp.com



HP is aiming the new LH 3000 at larger departments, where space may be limited...

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Defense Dept. to tap new mobile digital certificates

BY ELLEN MESSMER

WASHINGTON, D.C. — A division of the U.S. Department of Defense this week will announce plans for a massive rollout of new network security technology that addresses one of the key shortcomings of current products: a lack of support for mobile employees.

Sources close to the Defense Department say the Health Affairs division, which operates more than 150 medical facilities around the world, plans to distribute what are called "roaming certificates" to tens of thousands of medical personnel who are frequently on the move.

This roaming technology is expected to be a big improvement over typical digital certificates and public keys, which are usually tied to each end user's desktop and are considered cumbersome to move from machine to machine.

Digital certificates and public keys are increasingly popular tools for signing and

encrypting documents that traverse intracompany and intercompany networks.

Health Affairs is expected to announce it has agreed to use Vasco Data Security's SnareWorks software, which promises to deliver the roaming certificate technology as well as the ability to sign on to a network just once for authorized access to a host of applications and network resources.

The server component of the software will store thousands of private keys and X.509-based digital certificates, and upload them to appropriate end users operating any authorized machine attached to the Health Affairs network. Roaming certificates will vanish from those machines once end users log off.

For instance, if a physician based at the Walter Reed Army Medical Center in Washington, D.C., is dispatched to do surgery at Tripler Medical Center in Hawaii, he can log on to the network from Tripler and use his certificate

to digitally sign medical forms.

Vasco can brag that it was the first vendor to deliver a product to handle roaming certificates, thanks to the company's recent acquisition of IntelliSoft, which rolled out the technology earlier this year. But other vendors aren't ignoring the market.

In September, RSA Security shipped Keon, a roaming certificate product that has been tested to work with RSA, VeriSign, Netscape and Baltimore Technologies certificates. Entrust Technologies will announce roaming certificate software in a few weeks, but it will only work with Entrust certificates.

Until roaming came along, the only way to move a digital certificate around was to store it on a smart card or transfer it to a floppy disk using an industry standard called Public Key Cryptography Standards #12.

Lina Liberti, RSA's director of product management for Keon, says these older approaches have been "very awkward to do, and people have said this limitation to roaming is the reason they

stopped their public-key infrastructure deployments."

While Health Affairs, other users and the vendors are enthusiastic about roaming, support is not unanimous. Holding certificates and keys at a central server is risky, some observers say.

"We are looking at ways to do roaming certificates," says Paul Donfried, chief marketing officer at Identrus, a New York company owned by a dozen banks that is piloting a shared public-key infrastructure system. "But the issue you face in roaming certi-

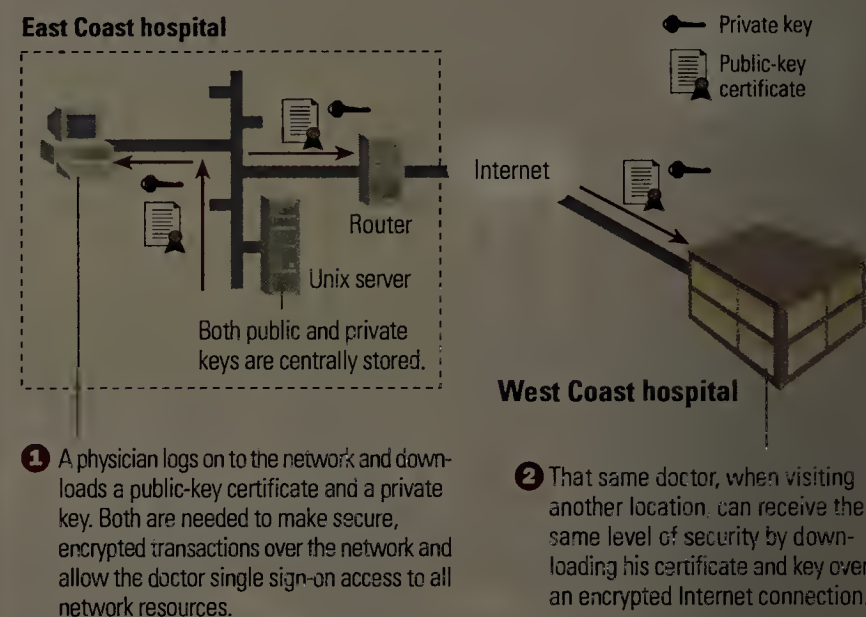
icates is that if the private keys are all centrally stored, that makes for an appealing target."

Supporters of roaming certificates acknowledge that the server holding the certificates and keys needs to have strong security-access controls and should be backed up by at least one other server.

One other drawback to roaming certificates is cost. Users will need to tack on an extra \$20 to \$200 per seat, based on pricing for the first few products on the market. ■

Go-anywhere security

How the Defense Department's Health Affairs division will use "roaming certificates" for single sign-on, digital signatures and the encryption of documents:



More breaking news

Network World Fusion now has more news than ever.
Check out these stories online:

Cable & Wireless teams with Compaq to create ASP business

Cable & Wireless has announced plans to team with Compaq to create a global application service provider business by January 2000. The two companies will invest more than \$500 million over the next five years in the new project.

DocFinder: 5642

The skinny on Boundless' new thin client

Boundless unveils a specialized Internet thin-client device featuring a sleek silver-and-black display screen and a keyboard connected via an infrared link.

DocFinder: 5643

Intuit's Quicken.com portal adds bill payment and hosted application service

Intuit, which operates the Quicken.com Web financial management portal, last week added new bill payment and hosted application investment services for small businesses. At the Intuit portal, used by about six million people, customers can now view and pay bills online for free.

DocFinder: 5644

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DocFinder: 3850

Oracle, continued from page 12

work of retailers, had already selected Oracle Applications to run its internal business systems.

When Specialized Bicycle sought bids for a Web-based e-commerce site, executives were dismayed at the steep costs. And they were even more dismayed to realize they were still expected to tie the Web site into their back-end applications on their own, Chief Information Officer Ron Pollard says.

The answer was to go with Oracle iStore: a ready-to-use, Web-based electronic store that has tight links with back-end Oracle Applications.

"We went from the original idea of having a Web site to going live in just seven months," Pollard says.

In the long run, one of Oracle's most critical steps may be one that's largely invisible to most of the industry: the wooing of hundreds of thousands of application developers.

New approach

According to Burton, Oracle did something brand new when it launched Oracle 8i: The company spent \$20 million to reach application developers, explaining and showing them how Internet applications could be built with the new technologies.

The company created a

Web site, Oracle Technology Network, whose membership has exploded from 50,000 to more than 450,000 in the past 12 months. However, it's not clear from that total how many members are active or how active they are. ■

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For more coverage of Oracle's OpenWorld activities, see Fusion.

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LAN service to save users money

BY MARC SONGINI

SOMERS, NY — IBM wants to help its enterprise server users trim a little budgetary fat as the holiday season arrives.

Big Blue this week is expected to announce a variety of service offerings touted to reduce by 15% to 20% annually the operating costs of PC server LANs. There will be five packages, ranging from educational classes to in-depth consulting to the full-scale implementation of total cost of ownership (TCO) schemes by IBM integrators and installers, says Dan Randsdell, an IBM vice president.

For the big boys

The IBM offerings are geared toward large enterprises with multiple IBM Netfinity servers attached to IBM IntelliStation and ThinkPad clients. IBM will compare this total cost against the prevailing industry averages and show customers where they could be saving — for example, by learning to use management tools such as Netfinity Manager server and client management software.

IT staff can learn to do things such as preset alarms on their servers. If a storage disk were about to crash, it would send out an alert and the disk could be swapped before it brought the system down. Another way customers can save is by learning to more fully use the capacities on existing servers, mitigating the need

to add more, IBM says.

One IBM customer says such programs may pay dividends, but they are not the only way to reduce TCO.

The best way to save money with a server is to buy the biggest one you can afford that will need the

Trimming the fat IBM's new TCO offerings include:

- Basic and in-depth analysis for small and large-scale shops.
- Pilot implementation.
- Use of IBM Universal Management tools.
- Installation and integration services.
- Hands-on training in implementing TCO practices.

smallest number of staff to maintain it, says Jack Reynolds, president of Quik International, an ISP franchiser with Windows NT and RS/6000 boxes. It's also important to get the staff fully educated in the intricacies of the product.

For example, Reynolds says the IBM marketing people both underestimated and underplayed the capacities and cost-saving features of the IBM RS/6000 server, and he didn't find out about some of them until he sent his people to special IBM-sponsored classes.

There are many elements on a server that might not seem important from a cost standpoint, such as kernel modification or memory management, but they can really make a big difference, Reynolds says.

However, these features are useless unless someone can make you aware of them and show you how to use them, so a TCO program might prove productive, he adds.

All the TCO packages will be available before year-end. Pricing will range from \$3,000 to \$250,000. ■

United,
continued from page 1

in response to the fledgling e-mail outsourcing industry, which also includes Critical Path in San Francisco and Mail.com in New York. While these newer e-mail hosting companies already manage millions of e-mail boxes for consumers and smaller businesses, until now they have not cracked the enterprise market. United is the first large corporation to opt for a Web-based messaging service as its primary e-mail solution, say industry watchers, who predict that others will follow soon.

"This is the biggest deal involving a company handing over responsibility of hosting employee mailboxes to a third party," says Mark Levitt, research director of collaborative computing at International Data Corp. in Framingham, Mass. "It's a sign that the hosted e-mail market is not just a business model being thought about... but is something that's actually happening."

John Street, president and CEO of USA.Net, says his company has several more enterprise deals in the works. "We'll have a couple other deals coming this quarter and quite a few more coming in the early part of next year that are as large as the United deal," he claims.

The two companies would not disclose the financial terms of the deal. But USA.Net usually charges around \$5 per mailbox, per month, terms which would mean \$1.2 million per year for United's initial 20,000 users and more than \$6 million per year for all of the company's employees.

United currently runs Hewlett-Packard's OpenMail software on two servers in its Chicago data center and provides e-mail service to 20,000 of its management personnel. Most end users access their e-mail through Microsoft Outlook.

The company's mobile work force, including its pilots and flight attendants, cannot access the OpenMail system. One of the drivers behind United's decision to migrate to a Web-based service was to provide e-mail access to all its employees from anywhere in the world over the Internet.

"If you look at our mobile work force, they don't have very effective means to com-

municate with their management," says Nirup Krishnamurthy, director of business systems development at United's Information Services Division. "This provides a whole new avenue for them, and it eliminates a lot of paper."

Web-based e-mail is ideal for companies such as United that have so many mobile workers, says Steve Robins, a senior analyst with the Yankee Group in Boston. "The United deal hits the sweet spot for outsourced messaging because it deals with people who are not sitting at their desks all day long, but people who need to have access to information on the road," he says. "It wouldn't make sense for these people to have client software on a laptop to use to log on to an e-mail system."

By outsourcing its e-mail, United also will save money and free up IT staff to work on other projects.

"One of the things we've been thinking about is: What is our core competency?" Krishnamurthy explains. "United Airlines has always been — within the travel industry — at the forefront of trying to take advantage of technological innovations to improve our business. We see this deal as one more step in that direction."

United officials say they chose the USA.Net service for its reliability and scalability. USA.Net will provide its Enterprise Messaging service, which includes encrypted mail sessions, junk mail blocking, virus scanning, e-mail forwarding and calendaring. United's staff will handle administrative functions, such as setting up mailboxes, but USA.Net will provide round-the-clock customer service.

United will begin moving its OpenMail users to the USA.Net service early next year.

Web-based e-mail is not for everyone, says Paul Hoffman, director of the Internet Mail Consortium. "United is making

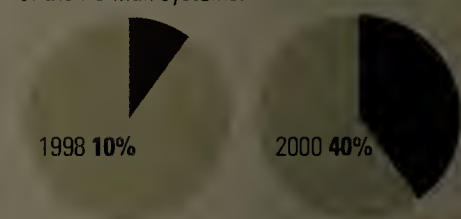
a tradeoff of features vs. scalability and ease of use," he says, pointing out that client/server e-mail systems offer more features and tighter security. "I think there's plenty of market for both types of products."

However, if many enterprises migrate to Web-based e-mail services, that could mean problems for the established e-mail software vendors. This

E-mail outsourcing pays off

According to a recent Gartner Group study of 700 enterprises, more customers will start outsourcing their e-mail systems to save money.

Number of enterprises outsourcing some part of their e-mail systems:



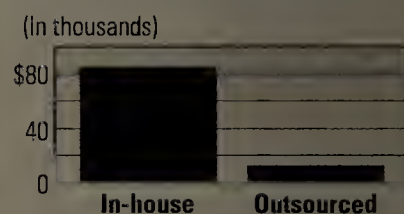
Estimated annual cost per user:

In-house (including labor, hardware and software): \$850 per year

Outsourced: \$120 per year

United's potential savings

Projected cost savings to move United's 100,000 employees to a Web-based e-mail service:



SOURCE: THE GARTNER GROUP, STAMFORD, CONN.

deal "shakes the ground that both Lotus and Microsoft live on everyday," says IDC's Levitt, pointing out that United could have bought the Notes/Domino or Exchange/Outlook platforms instead.

Lotus officials minimized the concern, noting that they are adding features to Domino that will make it a better solution for outsourcing.

"At the top of the list for the next release of Domino is to make it more accessible in hosted environments," says Ed Brill, senior product marketing manager for Domino. He adds that Lotus also is "making it easier to access Notes Mail remotely," as a way of competing against Web-based e-mail services. ■

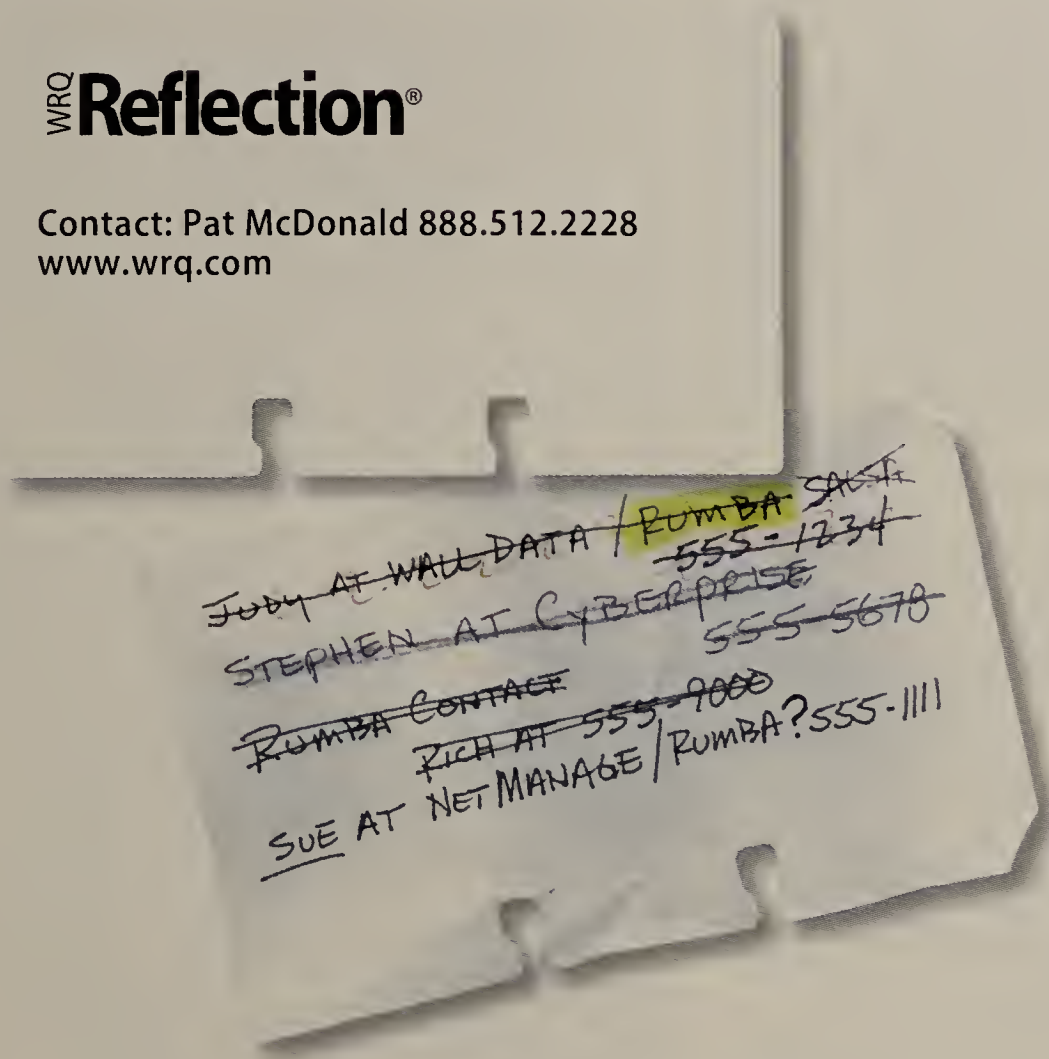
Correction

A recent story (NW, Nov. 15, page 10) incorrectly identified the maker of a product called eProvision Employees. The product is made by Business Layers in Upper Saddle River, N.J.

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Venture capital continued from page 1

setting the stage for a historic year in terms of the amount of money spent on Internet infrastructure.

The majority of the investment was related to the Internet, with firms involved in e-commerce and backbone equipment leading the way, says Kirk Walden, a national director for PricewaterhouseCoopers.

"This goes way beyond the latest e-commerce Web site," Walden says. "The Internet is represented in every industry category in the survey. . . . The Internet right now is driving our economy, and it's on an Everest slope."

Walden predicts that by year-end the total venture capital investment in network companies could reach as high as \$16 billion — triple the amount invested in 1998. To bolster that claim, Walden points out that plenty of early-stage companies are receiving first rounds of funding and will require more investment in the months ahead.

PricewaterhouseCoopers conducts a quarterly survey of all venture capital investments and breaks out data on the network industry exclusively for *Network World* readers.

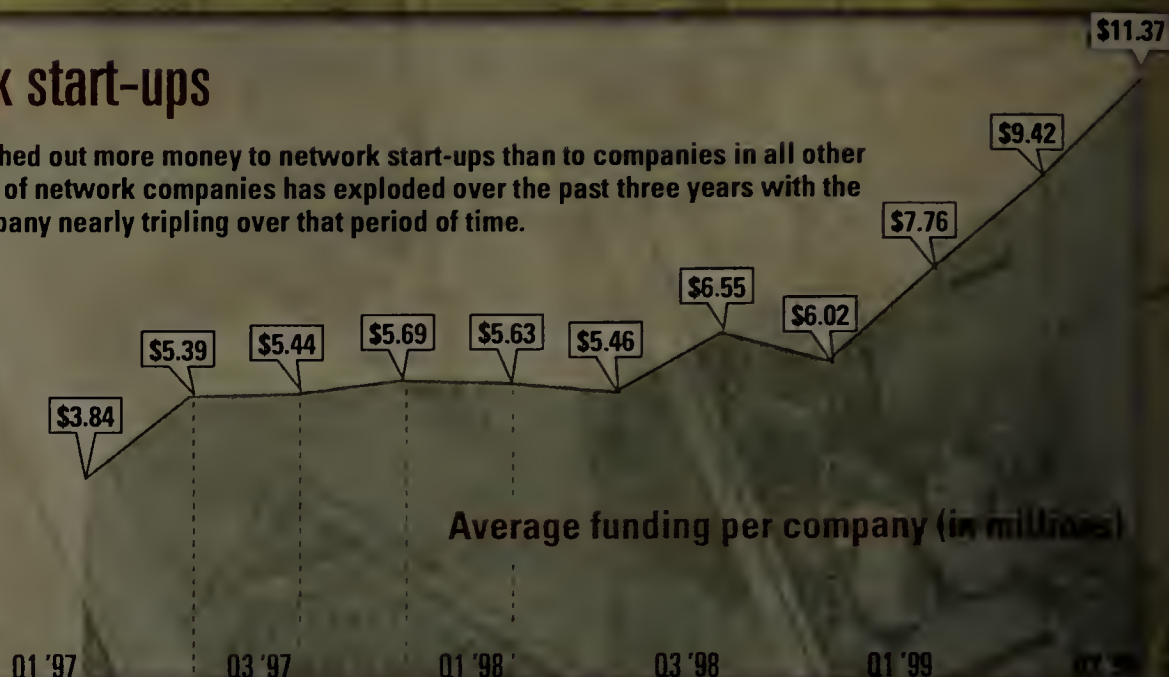
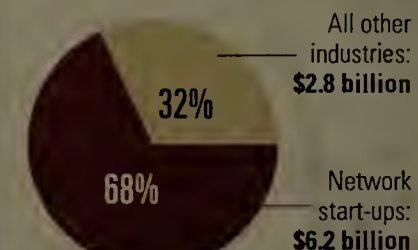
The study identified 546 start-ups offering communications-related equipment, software and services that received a total of \$6.21 billion in funding in the third quarter of 1999. The amount represents a nearly fourfold increase over the \$1.64 billion spent in the third quarter a year earlier.

"There is a race going on to build the next-generation

Venturing on network start-ups

Venture capitalists last quarter dished out more money to network start-ups than to companies in all other industries combined. Total funding of network companies has exploded over the past three years with the average amount awarded per company nearly tripling over that period of time.

Total venture capital funding in Q3: \$9 billion



SOURCE: PRICEWATERHOUSECOOPERS/NETWORK WORLD VENTURE CAPITAL SURVEY

equipment to support the Internet," says Tom Dyal, managing director of Redpoint Ventures of Menlo Park, Calif. "The winners are the ones that not only put the best team on the field, but also raise a large amount of money."

Of the top 10 deals of the quarter, half were related to e-commerce and all command-

according to Steve Meisel, global practice leader of PricewaterhouseCoopers' Computers and Networking Practice.

"Companies that were scraping by on \$7 million or \$10 million rounds of investment can go public and get market capitalizations of \$1 billion," Meisel says. "Every

companies that will soon be offering Internet-related products and services:

- In the area of Internet-related services, nearly 90 companies received a total of more than \$1 billion in funding. These companies are offering Web hosting, customer relationship management and credit collection services, many of which are geared toward e-retailers.

- One hundred and eighty-one companies received a total of \$1.7 billion in funding to develop software that automates all phases of the e-commerce process, including e-mail marketing, procurement, payment and customer services.

- In the communications area, 167 companies received more than \$2 billion in funds. Much of the funding went to ISPs, digital subscriber line service providers and wireless companies.

In addition to business-to-business e-commerce, the hottest areas for venture capital investments are next-generation broadband switches and routers, and broadband semiconductors, Dyal says. He identifies enterprise network equipment and network management software as two areas that are "cold."

"The trend in the enterprise that we see is that applications are being reconstructed to take advantage of the Internet," Dyal says, adding that he expects to see more investments in application service providers that rent out applications as well as start-ups that take more "novel approaches."

The large amount of money going to network start-ups and the fact that venture capital deals are getting bigger is good news for corporate IT buyers, who are increasingly turning to start-ups for technology that is vital to their e-commerce initiatives.

"You need to know that a company is well-funded and has a first-class management team before you start working with them," says Paul Mullaney, digital initiatives manager at 3M. 3M has tapped start-up Enterprise in Austin, Texas for an innovative Web-hosting application. Enterprise is backed by Austin Ventures and Triton Ventures.

"We're not working with IT start-ups as a rule, but the uniqueness of the Enterprise software drove the relationship," Mullaney adds. "We knew the company had completed its first round of financing, so we felt pretty secure in that regard. . . . We were pretty sure that it wasn't going to be a flash in the pan and that three months afterwards they'd run out of money." ■

Top prospects

The five network start-ups receiving the most venture capital funding in Q3:

Company	Funding (in millions)	Primary business
WebVan	\$275	Online grocer and drugstore
Datek Online	\$195	Online brokerage and electronic clearing network
eMachines	\$119.5	PC manufacturer and ISP
Formus	\$115.8	Wireless telecommunications company
Diginet Americas	\$90.2	ISP

ed big money — \$60 million or more for each start-up.

The largest deal of the quarter was \$275 million in fourth-round funding raised by WebVan, a company in Foster City, Calif., that is building an online grocery store and delivery service.

Other large deals were \$195 million raised for Datek Online Holdings, an Edison, N.J., online brokerage, and \$119 million raised for eMachines, a PC manufacturer and ISP located in Irvine, Calif.

The unprecedented venture capital investments follow the same path as the sky-high valuations of publicly held network companies such as Cisco, Juniper and Sycamore,

quarter we say, 'Wow, these valuations are incredible. We can't see it going much higher.' And then it does."

Good for enterprise nets

Meisel says the high valuations are good for enterprise customers because start-ups have more money to hire high-quality staff and to solve product development problems.

"The money means companies can get new products to market and have greater flexibility in how they get there," Meisel explains. "They have more money to do their sales and marketing and to gain alliances."

For enterprise buyers, the survey highlights many new



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This week's question:

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Briefs

3Com and F5 Networks last week signed an agreement enabling 3Com to resell and integrate F5's server load-balancing products and technology with 3Com's CoreBuilder 9000 enterprise LAN switch.

The first phase of the agreement, effective immediately, enables 3Com to resell F5's BIG/ip and 3DNS controllers to its enterprise customers for server load balancing, and Internet site reliability and performance requirements, respectively.

The second phase involves development of Internet Traffic Management modules for the CoreBuilder 9000 based on F5's load-balancing technology.

The new modules are targeted for shipment next year.

NetManage last week enhanced its ViewNow Web-to-host software product line to support browsers that use Microsoft's ActiveX technology.

Users download a copy of ViewNow Browser Edition for ActiveX from their local server and the software then establishes a link to IBM mainframe or AS/400 midrange and Unix host systems.

ViewNow integrates with directory-based management tools to offer customers an easy way to centrally customize the software, NetManage claims.

The package fills out the ViewNow family, which includes Windows Edition for Microsoft Windows desktops, ViewNow for Microsoft Windows Terminal Services, and ViewNow for Citrix MetaFrame.

ViewNow Browser Edition for ActiveX will be available at the end of the month for \$165 per user copy.

NetManage: www.netmanage.com

Building the bulletproof Ethernet

Link aggregation standard will provide needed backup, bandwidth.

BY JEFF CARUSO

Long popular for its resiliency benefits, the technology of link aggregation is finally about to achieve standardhood.

The IEEE has worked out much of the technical details of link aggregation in its 802.3ad specification, and the group expects to finalize the standard in March.

Link aggregation is a technique for combining two or more Ethernet connections into one logical link, or trunk. For example, a user could set up four 100M bit/sec Fast Ethernet connections running in parallel between two switches, but both switches would handle traffic as if there were a single, 400M bit/sec pipe between them.

A user might do this if the connection requires more than 100M bit/sec, but less than the full gigabit per second of Gigabit Ethernet.

"We didn't have enough of a bandwidth need for Gigabit Ethernet," says Chuck Yoke, manager of technology

architecture at Janus, a financial services firm. The company uses Cisco's proprietary link aggregation technology, Fast EtherChannel, to run multiple Fast Ethernet connections from its switches to its servers.

Yoke says he didn't want to install Gigabit Ethernet equipment and fiber optic lines to support the technology when the company had plenty of slower-speed equipment and copper cabling available. "We had open Fast Ethernet

ports on the Cisco Catalysts and Ethernet patch cables galore," Yoke says.

Another compelling reason to set up a network this way is for its built-in resiliency. If one of the parallel connections fails, the others can continue to run. In less than a second, a switch can detect that a link has gone down and reassign packet flows to the surviving links (see graphic).

Link aggregation between different vendors' equipment is possible today. So why is a standard necessary?

The switches can only interoperate at a very basic level, explains Cam Cullen, senior technical marketing manager at 3Com. With the standard, the switches would be able to perform higher-level functions, such as catching configuration errors.

Another advantage of having a standard is that third-party network management tools, such as Hewlett-Packard's OpenView, would be able to see aggregated links, Cullen says. This would make troubleshooting easier.

The IEEE 802.3ad specification uses Link Aggregation Control Protocol to verify the link configurations and to send packets to each of the physical links in the trunk. The protocol also provides the mechanism for adding and subtracting links from the trunk.

The upcoming standard works for all speeds of Ethernet, so users could even establish multigigabit links composed of Gigabit Ethernet connections. ■

Strength in numbers

Link aggregation provides a degree of resiliency.



Traffic is divided among multiple links. Here, four individual Gigabit Ethernet links form a 4G bit/sec pipe.



With aggregation, if one link fails, the other three pick up as much traffic as possible (3G bit/sec in this case). If the switches were connected with only one link, no data would flow.

Vicinity serves up non-PC desktops

Firm's E-pliances promise to save space and management time.

BY DENI CONNOR

If you believe start-up Vicinity Systems' CEO Mike Frost, you won't have an ungainly PC on your desktop in the future.

Vicinity is creating PCs for use in customer service and call centers where desktop space is often cramped. The PC, which Vicinity calls an appliance, consists of two pieces: a modem-sized box, dubbed an E-pliance, that sits on the desktop, and a rack-mounted PC system unit, called an E-pliance Processor Blade, that sits in the server room.

The E-pliance attaches to the user's keyboard, monitor and mouse and then connects to the E-pliance Processor Blade via unshielded twisted-pair cabling, freeing the area on the desktop normally occupied by the system unit. Peripherals, such as printers or speakers, attach to legacy PCI or USB slots on the

E-pliance.

Up to six E-pliance Processor Blades — outfitted with Intel Pentium or Celeron processors, 128K bytes of memory and 10G bytes of disk space — fit into the E-pliance Server, which slides into a standard rack enclosure. Network file servers and any external storage can also be mounted in the rack. The E-pliance Server connects to the Windows NT, Linux or Solaris server via 10/100M bit/sec Ethernet links.

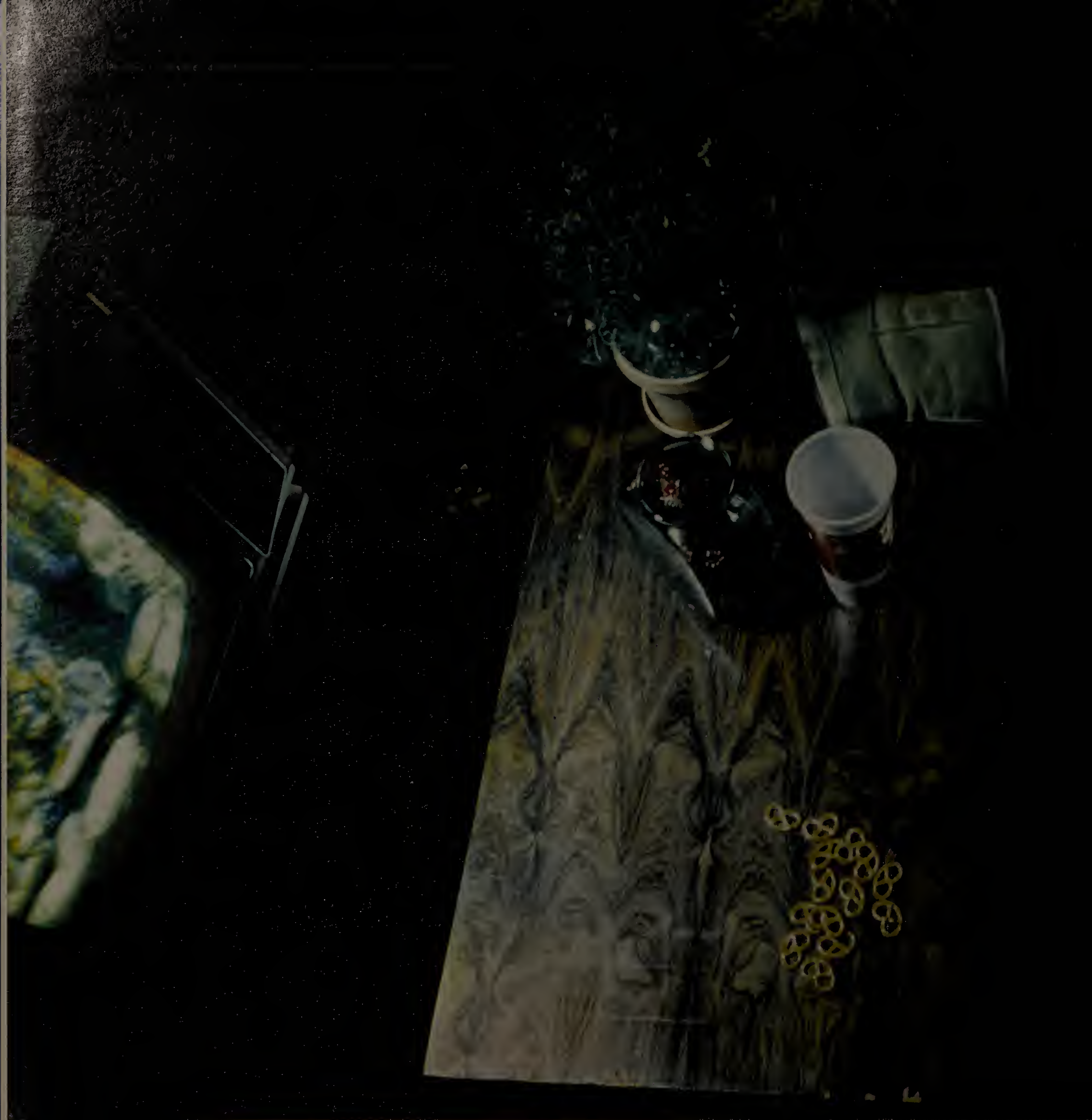
From the E-pliance, users can browse the Internet and access database information and query forms to get their jobs done even though their system unit is up to 1,000 feet away.

Vicinity uses a patented technology, dubbed MN8, that takes monitor, keyboard and mouse signals from the E-pliance and transports them over Category 5 cable to the remote E-pliance Processor Blade. See **Vicinity**, page 26

High-speed LANs

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Hewlett-Packard looks to ease host printing jam

BY MARC SONGINI

PALO ALTO — Hewlett-Packard is rolling out an integrated software, hardware and services package that the company says will let users more easily print data stored on a

mainframe in a distributed network environment.

Historically, printing centralized mainframe or midrange server data on a LAN has been tricky. Mainframes typically use SNA-based protocols for printing, such as IBM's

Intelligent Printer Data Stream format. These mainframe and midrange printing protocols are usually incompatible with printing protocols used on a LAN, such as Adobe PostScript.

To allow LAN users easier access to host data, HP intends

to roll out a comprehensive print package known as Distributed Host Printing.

Included in the package are HP LaserJet printers and network technology, consulting services, and integrated third-party communications hardware and software.

For instance, HP will be reselling Dazel's Output Server software. The company says Output Server lets customers distribute mainframe print jobs to LAN printers.

Users will then be able to bring the host data directly to their desktops and print it locally, without having to print it from a central printer tied to a mainframe.

Typically, users have little control over what parts of a document they can print using a mainframe, says Riley McNulty, an analyst with International Data Corp., a market research firm in

Framingham, Mass.

If users want to print a section of a report, for instance, they usually have to print out the entire document, then distribute it by hand, McNulty says. HP intends to let users pick what portions of a document or file they want and then distribute it electronically, saving time and resources.

HP, a strong player in workgroup printing, is now moving into the high-end enterprise network territory usually ceded to IBM and Xerox, McNulty says.

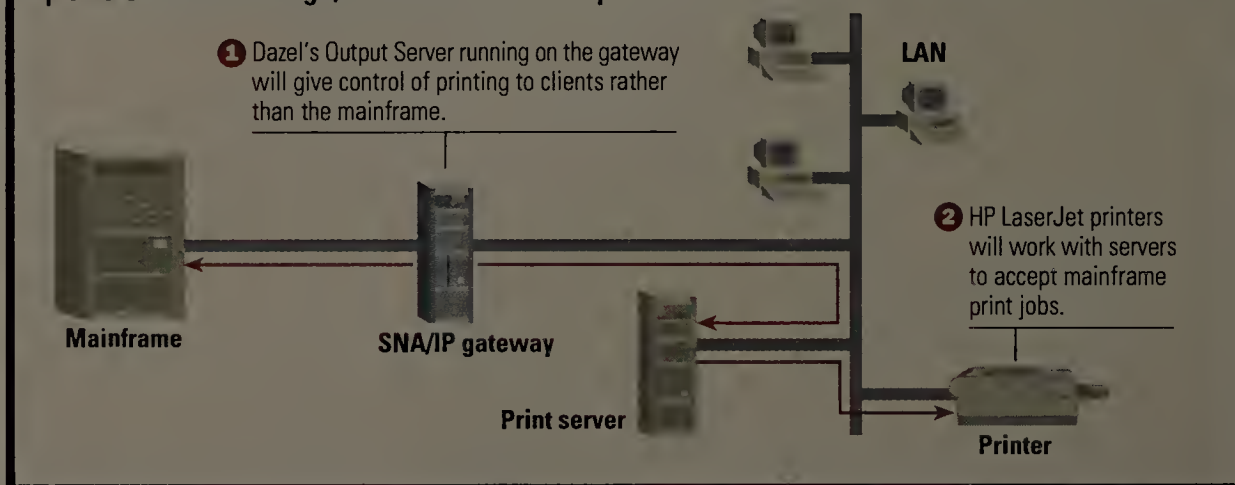
The company will go head-to-head with products such as IBM's multipurpose InfoPrint Manager. McNulty says HP is primarily targeting this offering at companies with many workgroups.

The package is available now with average pricing starting at around \$80,000.

HP: www.hp.com

Mainframe printing evolves

HP's mainframe printing package will let LAN clients print mainframe data with their local area printers instead of large, mainframe-attached printers.



Red Hat eyes handheld market

Linux to compete with Windows CE following Cygnus acquisition.

BY PHIL HOCHMUTH

With Red Hat Software's acquisition of Cygnus Solutions last week, the company has established itself as the largest open source software company in the industry, and the firm is now setting its sights on the handheld computing market.

On Nov. 15, Red Hat announced its \$674 million acquisition of Cygnus, a Sunnyvale, Calif., company that makes Linux application development tools and embedded operating systems. Future developments from the merger could greatly benefit enterprise networks that utilize remote, handheld computing by helping to bring more robust handheld client/server applications to market faster, says Erik Troan, Red Hat's director of engineering.

"We feel that by combining Red Hat's strengths in servers and workstation technology with Cygnus' expertise in small devices, we're creating a com-

peting story for the post-PC world," Troan says. "We think it will be very important in future enterprise networks to have smaller devices talking back to servers on the back end," as small networked devices begin to take the place of portable PCs for some remote computing tasks, he says.

Troan says having the technology for Linux server and handheld devices under one roof will speed development of Linux-based applications for the two platforms.

"We will now offer a single set of APIs, libraries and programming tools for everything from systems such as palm-tops and handheld devices to powerful servers," Troan says. This will help programmers because they will have one set of APIs to write to for both platforms.

One of the key products that Red Hat will develop and offer in the embedded and handheld operating system market is Cygnus' Embedded Cygnus Operating System

(eCos), which is an embedded Linux-like operating system suitable for small devices such as handheld computers and cellular phones.

"We feel this operating system can be competitive with Windows CE," Troan says.

Additionally, Cygnus' EL/IX, an API for developing applications to run across multiple platforms, such as eCos, embedded Linux and full-blown Linux, will be developed by Red Hat. Both the EL/IX and eCos software products are open source, which makes the technologies a natural fit with Red Hat, Troan says.

Also announced last week was the promotion of Red Hat President Matthew Szulik to the position of president and CEO. Szulik, who joined Red Hat a year ago as president, will oversee the combined executive teams of Red Hat and Cygnus. Bob Young, former CEO and Red Hat co-founder, will now serve as chairman of the company. ■

Vicinity,
continued from page 23

Blade where processing occurs.

The separation of the keyboard, monitor and mouse from the system unit allows network managers to centralize management, configuration and troubleshooting tasks and avoid theft of PC parts.

"The technology allows you to push the video display over a thousand feet and opens up many opportunities for repackaging the PC," says Ed Olkkola, general partner at Austin Ventures in Austin, Texas.

Starwood Resorts, a hotel operating company that operates the Sheraton and Westin Hotel chains, has expressed interest in Vicinity's hardware. Starwood uses Vicinity's remote rack-mounted PCs in its reservation center in Austin, Texas.

"We are using them to train reservation agents and in hotel properties where front desk space is always cramped. If they free up desk space by putting the CPU in the equipment room, this may be a solution for front desk clerks across our network," says Greg Collins, manager of central reservation offices technology.

"You have a tendency in call centers that when agents have free time, they fiddle around with floppy drives or on/off switches. With [E-pliances] there's nothing on the desktop for them to mess with. They can turn the monitor off, but other than that, they tie into a little box they can hardly see. There's an element of security in that."

A former IBM fellow founded Vicinity in 1997 as a research and development facility. It was reorganized in January to create appliances that fit on a user desktop.

The E-pliance Processor Blade and E-pliance are sold as a pair for \$900 per desktop. They will ship in the first quarter of 2000. ■

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IN THE VACINITY

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Dave Kearns

MICROSOFT SHOULD GET WHAT IT DESERVES

A lot has been written in the aftermath of Judge Thomas Penfield Jackson's findings of fact in the Microsoft antitrust case. Today, we'll look at what Microsoft has said. Keep in mind, though, a classic propaganda tenet: If you repeat something often enough, people will accept it as fact, without questioning its truth or falsity.

Microsoft President Steve Ballmer said in an op-ed piece in the Nov. 9 edition of the *Wall Street Journal*, "... We cannot compromise on the government's demands that Microsoft essentially stop listening to the marketplace and cease innovating its products."

Paul Maritz, vice president of Microsoft's Developer Group, wrote in the Nov. 10 *San Jose Mercury News*: "Our company is built on very clear values: innovation, integrity, service to customers, partnership, quality and giving to the community."

On the Microsoft Web site, Bill Gates is quoted as saying: "We have a responsibility to protect the principle that has made America a leader in technology — the freedom to innovate on behalf of our consumers."

The only thing wrong with these quotes is that Microsoft has never innovated anything — with the possible exception of Microsoft Bob. To lay claim to innovation you have to be able to demonstrate that you thought up a new way of doing things and then implemented your idea.

From the very beginning, Microsoft has grown on the back of other, non-Microsoft developers and software companies. The road from DOS 1.0 to Windows 2000 is paved with failed or diminished software vendors who created innovative applications only to see them co-opted or bought out by the behemoth of Redmond.

There are a number of principles at issue in the antitrust trial, but the ability of Microsoft to innovate is not one of them. Rather, the ability of other, non-Microsoft companies to innovate and profit from their innovation in the software industry is central to the case.

Microsoft has, time and time again, trampled on thousands of smaller software vendors' right to innovate.

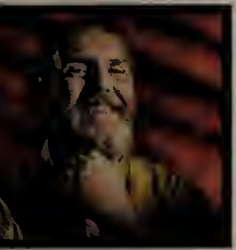
It is not simply disingenuous, it is propaganda on the grandest of scales for Microsoft to claim the banner of innovation as its defense against the overwhelming facts in the anti-

trust case.

Many are urging Microsoft and the Department of Justice to reach a settlement. But the arrogance shown by Bill Gates and his henchmen during the trial and in their reaction to the findings of fact leads me to hope that there is no settlement, and

instead that Microsoft is found guilty and receives the punishment they so richly deserve.

Kearns, a former network administrator, is a freelance writer and consultant in Austin, Texas. He can be reached at wired@vquill.com.



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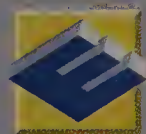
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Briefs

Local exchange carrier Cincinnati Bell and interexchange carrier IXC Communications last week closed their previously announced merger — and promptly renamed the entire company BroadWing, Inc. IXC contributes both a national wholesale division that offers broadband connectivity and a retail division that sells frame relay and other services mostly to midsize businesses. Although a vestige of the original Bell System, Cincinnati Bell is not a true regional Bell operating company and thus does not have any long-distance restrictions, so BroadWing will be free to offer voice and data services nationally.

BroadWing: www.broadwing.com

Intermedia Communications will sport a new OC-48 fiber-optic backbone for its developing IP services courtesy of Williams Communications. Intermedia, which sells frame relay, ATM, IP and other data services to corporations, will lease 11 point-to-point 2.5G bit/sec lines from Williams, with hubs in San Francisco, Chicago, Dallas and Washington, D.C.

Intermedia: www.intermedia.com. Williams: www.williamscommunications.com

The IT Association of America has launched the ASP Committee to help define and advance the emerging application service provider (ASP) industry. The ASP Committee's goals include establishing best practices for services and support. The goals are similar to those of another group, the ASP Consortium, which was established in May by two dozen vendors and service providers.

ASP Committee: www.itaa.org; ASP Consortium: www.aspconsortium.org

Who is really selling that DSL service?

Customers might want to use caution with DSL services from some local carriers.

BY TIM GREENE

Corporate customers should pay particular attention to service-level agreements (SLA) when they buy digital subscriber line (DSL) services from established local carriers selling DSL outside their home regions.

Such services are pieced together using as many as four other service providers, creating a potential morass when trying to fix problems.

"Where does the buck stop if the line goes down?" asks Carl Garland, principal analyst for network services at Current Analysis in Sterling, Va.

For example, SBC Communications and GTE Internetworking recently announced deals with Concentric Networks, Covad Communications and NorthPoint Communications to provision DSL lines outside GTE's and SBC's home territories.

And US West and Qwest are teaming with an unspecified third party to deliver DSL outside US West's territory.

In its arrangement with Concentric, SBC will resell under its own name Internet access packages that Concentric offers.

GTE will use Covad and NorthPoint to set up DSL lines and then add GTE's own Internet access services to produce a DSL Internet access service.

These relationships are actually more complicated than they seem at first glance.

Take the instance when a customer buys a DSL service from SBC outside its 13-state region. Beneath that service the actual wires to the customer site are owned by an established local carrier, such as Bell Atlantic. SBC would rely on Concentric to set up DSL links to customer sites, but Concentric might pass that chore along to DSL specialists Covad or NorthPoint.

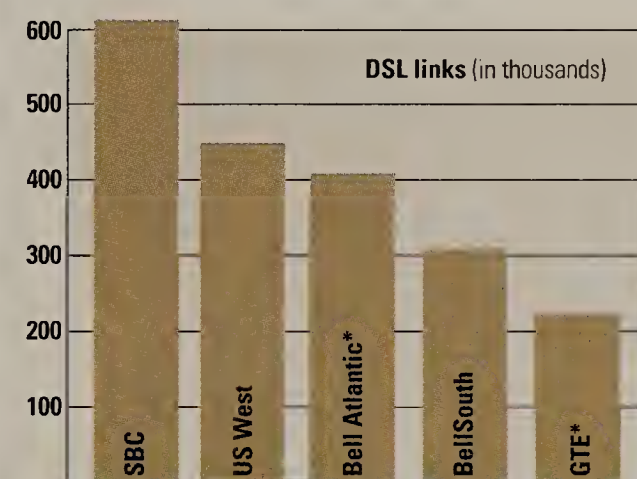
Covad or NorthPoint would deliver the traffic to a Concentric site. That traffic might then be turned over to long-haul provider Williams Communications

to deliver it to SBC. Or Concentric might just drop the traffic onto the Internet, in which case SBC would simply be a reseller of the service, with no direct control over the network.

"A savvy customer might not be com-
See DSL, page 34

The look ahead for DSL

The following are carrier-by-carrier projections of the numbers of DSL links that will be in place in the U.S. by the end of 2000. Texas Instruments compiled the numbers to determine the market for its DSL chips.



* By the end of 2000, the merger of these two companies may be completed.

NaviSite teams with Akamai to speed Web content

BY DENISE PAPPALARDO

Hopping on a hot industry trend, Web-hosting service provider NaviSite is rolling out a service that will let customers more quickly serve up Web site content to end users around the world.

NaviSite is teaming with Akamai Technologies to deliver NaviSite Content Distribution Services to Web-hosting and collocation service customers. NaviSite is using Akamai's FreeFlow network and technology, which will let users cache and store parts of their Web content on Akamai's FreeFlow servers in 24 countries.

When users sign up for NaviSite's hosting services, they can have their sites hosted in one or both of the company's data centers, which are located on both coasts. The service lets users

expand their basic hosting by bringing their content to nearly 1,500 Akamai servers that reside on multiple ISP networks.

Akamai's technology lets users tag content within any Web page that can be cached. When that information is requested, it is sent to an end user from the closest and least-congested Akamai server using an algorithm designed by Akamai.

"What Akamai does well is deliver static content, such as GIF files, images or text," says Pierre Bouchard, director of product marketing at NaviSite in Andover, Mass.

NaviSite is the third provider with which Akamai has teamed. Both Digex and Frontier GlobalCenter are also offering their hosting customers Akamai-enabled content distribution

services. Several others, including America Online, Exodus Communications and @Home, have teamed with Inktomi, another cache server vendor, to offer content distribution services.

Many Web-hosting service providers are rolling out "caching technologies to even out spikes in demand and congestion," says Jeanie Schaaf, a senior analyst at Forrester Research in Cambridge, Mass. Users can see quicker Web page uploads because content is physically closer to them, she says, and distributing content reduces the traffic that travels long distances over the Internet from a single server to users all over the world.

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NaviSite: www.navisite.com

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Wan Monitor . Daniel Briere and Christine Heckart

USING THE CARROT INSTEAD OF THE STICK

We tend to use sticks more than carrots in the telecom industry, especially when it comes to service-level agreements (SLA) with providers.

There are myriad SLAs offered by service providers to convince us that their service levels meet our availability expectations. For example, MCI WorldCom's 100% Internet availability guarantee gives a day's credit for any downtime, while AT&T gives one-day credit for about 10 minutes down in a calendar day.

Such sticks have limitations, however. Generally, the service provider has the information that would lead to credit payment. This means customers must be proactive in complaining about service availability or quality and put the process of credits in motion. And with some providers,

you must prove the standards have been missed. The process can be time-consuming, costly and not very satisfying to either party.

Negotiating more substantial penalties can be a difficult undertaking that leads to bad feelings at the start of what should be a long and successful relationship. In addition, the credit awarded is usually binary — either the service provider makes the standard or it doesn't. There are not grades of service performance and sticks of different sizes to go with each.

Credits don't really solve the problem anyway. During major service outages the credits taken in aggregate may cause some discomfort to the service provider, but they don't cover the true cost of downtime for an enterprise.

So is there a better way?

Performance premiums, instead of

credits, may provide the carrot to coax excellent service from your favorite service providers. Instead of penalizing the provider for missing a benchmark, performance premiums reward them for meeting higher levels of service quality, availability, throughput or whatever.

In the performance premium methodology, customers hold aside a reserve of cash that may or may not be paid to the service provider based on its performance. Better service, more money! This approach shifts the balance of power to you rather than the service provider. Service providers must prove they have met or bettered the service threshold, rather than placing the onus on the enterprise to prove they haven't.

A performance premium can get the relationship off to a good start. It

can offset potential credits, making it easier to negotiate both the carrot and the stick. For example, if availability sinks below 99.99%, the service provider pays a credit to the enterprise. If availability rises above 99.99%, the enterprise pays a performance premium to the service provider.

And with performance payments there can be grades of service quality, with more money paid when the service provider hits higher and higher thresholds. With this type of balanced approach, enterprises can be assured that they are getting the best their service provider has to offer.

Briere is president and Heckart is vice president of TeleChoice, a consultancy in Boston. They can be reached at dbriere@telechoice.com and heckart@telechoice.com.

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DSL,

continued from page 31

fortable with that," says Claudia Bacco, a DSL analyst with TeleChoice, a telecom market consultancy in Boston.

Garland recommends getting SLAs for DSL services that impose a penalty if availability of the line drops below a set level or if throughput on the line drops off. The SLA won't make the service perform better, but customers get a break if service is bad.

The complexity of the service does not necessarily mean there will be problems. After all, Bacco notes, long-distance phone calls commonly traverse the networks of three or more carriers. "So in theory, the [underlying carriers] should be transparent to the customer," she says.

Both Bacco and Garland say it is possible that local carriers with resale agreements with ISPs and DSL carriers could wind up merging. SBC, for example, already owns part of Concentric.

Reselling services is a low-margin business, Garland says. This means the regional carriers are probably not pushing out-of-region DSL for the profit, but as a way to get their feet in the door with customers.

By reselling, the carrier does not have to formally register itself as a competitive local exchange carrier or bargain for equipment space in local carrier's switching offices, Bacco says. Both are time-consuming and expensive.

Customers can expect that the out-of-region DSL offerings will rapidly

become more sophisticated. For example, an initial DSL Internet access service could evolve to include voice over DSL and long-distance, Bacco says.

SBC has already said that DSL will provide remote links for customers using its Enterprise Virtual Private Network (EVPN) managed service. EVPN can tie remote employees, business partners and customers to corporate networks.

Meanwhile, DSL carrier Rhythms NetConnections is teaming with Intermedia Communications to deliver voice services over DSL lines and frame relay links. Intermedia has its own long-haul fiber network and relationships with local carriers to deliver nationwide services. It also uses DSL as an access link to deliver frame relay services to customer sites.

SBC: www.sbc.com; Concentric: www.concentric.com; Rhythms: www.rhythms.com; Covad: www.covad.com; NorthPoint: www.northpointcom.com

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Frame relay NNIs in the cross-fire

BY DAVID ROHDE

Big carriers tend to justify the telecommunications merger frenzy by saying users want to get all types of services bundled together into a single package from one player. But many users actually prefer to get different kinds of services from different carriers.

And then there are the users who even want to — or have to — get the same service from two carriers.

That's the situation that led to the development of a specialized form of networking called Frame Relay Network-to-Network Interfaces (NNI). One of the earliest frame relay standards, NNI has long been used by local exchange carriers and regional carriers.

Those carriers tend to sell frame relay service to users with many locations in a concentrated geographic area. But the carriers need to find another carrier to connect sites outside their territories — or, in the case of Bell companies, across any two local access and transport areas (LATA).

The challenge has always been to find a long-distance carrier that will agree to hook up its frame relay net to the local carrier's net. Now that challenge may be getting harder than ever because in the past year AT&T and MCI WorldCom have introduced their own intra-LATA frame relay services. Having their own intra-LATA frame relay services means AT&T and MCI WorldCom can provide multiple local frame relay connections in a single metropolitan area on the same switch platforms as their national frame services.

Should you consider a frame relay NNI? The answer is hotly debated among vendors and analysts, who alternately praise recent improvements in NNI procedures and practices or criticize NNIs as a bottleneck strewn with network-management headaches.

Some carriers want it all

These days, if you go to your long-distance carrier — especially AT&T — and ask if it will set up a frame relay NNI with your local carrier, expect to get pitched on moving all your frame relay business to the long-distance carrier.

AT&T is even reluctant to consider an NNI if you are involved in a merger with another company that uses a different carrier. Carrier officials say they would rather take their chances on winning or losing your entire business. "When corporations merge together, unless they deliberately choose a multiple-vendor situation, one carrier usually ends up dominant," says Keith Falter, AT&T's national marketing manager for high-speed services.

Temporarily, AT&T will assist users to put two separate routers on each site — one for each carrier's frame relay network — each attached to the LAN.

NETWORK-TO-NETWORK INTERFACES

***Some carriers shun NNIs
in favor of new metro-area
services.***

that can be shared among multiple users, for a single user it will sometimes provision a private link, such as a T-1, between its frame relay net and another carrier's (see graphic).

Not all carriers balk

But there are several second-tier, long-distance carriers that will happily link together local frame relay clouds across LATAs for multiple users who prefer to employ the regional Bell operating companies for frame relay. According to a recent survey by Distributed Network Architects, these include Frontier, IXC Communications and even GTE — a non-Bell local carrier with no long-distance restrictions.

Another carrier that has specialized in working NNIs with RBOCs is Intermedia, a Tampa, Fla.-based company that began as a competitive local exchange carrier and has branched into long-distance data services. "Traditionally Intermedia has been very willing to do NNIs and is very aggressive in that market," Taylor says. Intermedia even offers network-availability guarantees across its NNIs that are only slightly less robust than those entirely on its network.

One of the old knocks on NNIs was that each carrier couldn't see across the connection to view the other carrier's network, leaving users in the dark as to who to call in case of an outage. NNI proponents claim that scenario is outdated. To address this question, the Frame Relay Forum approved a variation on NNIs in 1997 — Implementation Agreement FRF10 — which allows two carriers to pass switched virtual circuits between each other to gain more flexibility.

To further alleviate finger-pointing problems, Sprint and local carriers sharing an NNI for a particular user will attempt to create a common addressing database. "You want to be sure that they have some common mechanism for referring to a particular circuit," says Tom Mennona, director of Sprint's packet data services center.

Make no mistake, says Taylor: NNIs can save carriers and users money. That's because if a user organization employs frame relay access from a local carrier to reach the long-distance carrier's frame relay switches, it avoids often-expensive leased-line dedicated access at 56K bit/sec or T-1 speed.

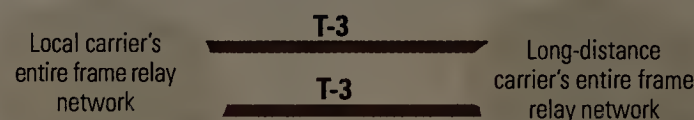
In fact, a shared NNI "could actually give you a better performance" than some of the connections on a single carrier's network, Taylor says. That's because if carriers set up the NNI with many users in mind — say, a T-3 link — the mathematics of statistical multiplexing work in your favor and it's very unlikely that the NNI will be a bottleneck, as opposed to a 56K bit/sec branch-office connection that could max out with bursty traffic. ■

Public vs. private network-to-network interfaces

In a private NNI, typically the long-distance carrier provides the dedicated link between two clouds and only that user's traffic can traverse the link.



In a public NNI, the long-distance carrier provides one or more links between the two clouds. The links may be higher speed, but they are shared by multiple users' traffic.




But that's not a frame relay NNI because the two WANs never meet.

AT&T officials are candid that they will present users with alternatives if they try to force frame nets together. One alternative is AT&T's Local Frame Relay service, introduced last year, which puts multiple sites in a metro area on AT&T's switches for much less than the cost of AT&T's national frame relay. Another is an AT&T service called IP-Enabled Frame Relay, which sends one permanent virtual circuit from each site into an IP cloud that can terminate the connection at any other site. A third alternative is AT&T's Transparent LAN Service, which provides native LAN-speed connections, again generally in metropolitan areas.

Steve Taylor, president of Distributed Networking Associates in Greensboro, N.C., has a different idea. He suggests that if users find themselves with frame nets from two carriers that won't agree to an NNI, the user can install a frame relay switch at a central site and set up the NNI there.

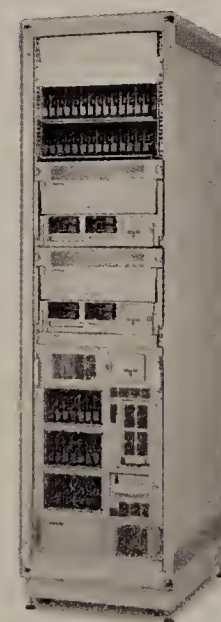
Sprint has a different approach. Although Sprint doesn't have regular public NNIs with local carriers



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Briefs

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Datametrics: www.datametrics.com

BullSoft has integrated storage management features into its OpenMaster management tool. The software will monitor disk subsystems from Compaq and EMC, tape libraries from Storage-Tek, and Fibre Channel switches from Brocade. It also works with storage management software from Exabyte, HighGround, Legato and Veritas. OpenMaster alerts IT managers when storage devices break or run out of capacity, and it automates backups and job scheduling. The new version is shipping now, with pricing starting at \$18,900.

Bullsoft: www.bullsoft.com

Epicentric, a San Francisco maker of corporate portal software, has named Michael Crosno as its president and CEO. He succeeds company founder Ed Anuff, who remains Epicentric's chairman and takes on the new role of executive vice president of products and services. Crosno will focus his efforts on expanding Epicentric's partnerships and building the company's hosted services business. Crosno is a 20-year veteran of the high-tech industry, and most recently served as executive vice president at Gemplus, where he helped build the company's e-commerce business.

Car makers' portals no party for suppliers

General Motors and Ford could make millions of dollars off of parts suppliers.

BY ELLEN MESSMER

General Motors and Ford Motor Co. early next year plan to have Web-based catalog and procurement systems ready to buy parts from suppliers. But despite the hype about the benefits of e-commerce, it's not clear whether the systems will help or hurt the tens of thousands of parts suppliers.

E-commerce

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In fact, the new online systems may only serve to fatten the corporate coffers of GM and Ford at the expense of their suppliers. That's because GM and Ford, in an unprecedented move for the auto industry, say they will charge their suppliers an undisclosed percentage on every order they place with them through their Web portals.

In essence, this means suppliers will have to pay for the "privilege" of selling to the two automakers online, a practice not initiated until now.

At least one supplier contacted by *Network World* says the GM and Ford moves came out of the blue, and many suppliers are evaluating the situation.

GM has come right out and said it will force suppliers to use its business-to-business portal, TradeXchange. Ford claims use of its portal, AutoXchange, will be voluntary.

GM's TradeXchange is based on software from CommerceOne, which under the deal will also get a percentage of the fees paid by the suppliers. Ford's AutoXchange is a joint venture with Oracle; these partners plan to split profits made from suppliers who have to ante up every time they make a sale.

This e-commerce power grab to make millions of dollars off the auto-parts suppliers is only going to get worse as other manufacturers sniff out the opportunity to go after suppliers that can't say no.

"We anticipate DaimlerChrysler and Caterpillar are going to have their own portals over time, too," says Tycho Howle, chairman and CEO at Harbinger, which has provided proprietary electronic data interchange



"TradeXchange will be a requirement for our suppliers, and that is the only way we'll do business."

Harold Kutner, vice president of worldwide purchasing, General Motors

(EDI) value-added network (VAN) services to the auto industry over the years. Harbinger this year has invested in migrating its EDI VAN to the IP-based harbinger.net, its own portal for Web services.

TradeXchange and AutoXchange will
See **Car makers**, page 42

Active Directory help on the way from BindView

Directory tool is similar to BindView's existing Novell Directory Services offering.

BY JOHN FONTANA

HOUSTON — A flood of directory migration tools is hitting the market in advance of Microsoft's Active Directory. But what kind of help will be available once IT executives complete the migration?

BindView claims to have the answer with its bv-Control for Active Directory, a tool for managing security and access rights in the directory. The tool is a mirror of the company's NOSadmin, which is licensed to five million users of Novell Directory Services.

BindView's bv-Control for Active Directory lets users create and analyze reports on user permissions, security

rights and access levels for every directory object. The utility works similarly to a database query tool. Users can run reports to discover things such as inactive user accounts or security levels on particular objects. From within those reports, users can take actions such as deleting users or adjusting security levels.

"We use NOSadmin to keep our directory clean and under control for monitoring," says Marsha Kinsey, senior LAN design analyst at Southwest Airlines in Dallas. "There is no way I could look at each individual object to check settings like security levels. With NOSadmin, I set my parameters and run a report."

Kinsey recently used the tool to cor-

rect errors on user names in e-mail addresses. She ran a report asking for every account that had the flaw and
See **BindView**, page 42

www.nwfusion.com

AN ACTIVE DIRECTORY

More details: bv-Control.

Opinion: Mark Gibbs on why Active Directory is so important.



Software targets Web site content design upgrades

BY CAROLYN
DUFFY MARSAN

TEMPE, ARIZ. — Getting a Web site up and running is easy, but keeping the content fresh can be a real challenge. Start-up Today.com is trying to solve that problem with a software package that lets anyone with a word processor update the content of a Web site while letting HTML-trained developers retain control over the site's design.

Called WebWare Lite, the Web site development and management package is the first in a series of products that Today.com plans to roll out over the next year. WebWare Lite runs on Microsoft's Windows NT and Internet Information Server software. It has two components: a template server and a content manager.

The template server allows a Web site designer to create the overall look and feel of the site, such as how standard components will look and where they will be placed. The content

manager is a Web-based administrative console that lets the designer set restrictions on who can change the content. Authorized users can edit the content of the site separately from the page design. While the software supports any word processor, it comes with a plug-in for Microsoft Word.

"It's increasingly difficult to find Web site developers. You don't want to have minor changes going through them," says Ken Wilson, Today.com's chief technology officer. "We've built a framework that lets Web developers focus on the design, and the content is handled separately."

Wilson says another key feature of WebWare Lite is that it supports dynamic page development in such a way that both the content and the page layout are generated at the end user's or developer's request. Sites also can be designed to support distributed processing and load balancing, he adds.

Eric Klein, an analyst with

The Yankee Group, has seen several Web site management tools like WebWare Lite that provide templates for Web sites and allow end users to update the content without knowing HTML. Klein says these packages are useful for

WebWare Lite Features:

Runs on Microsoft Windows NT and Internet Information Server.

Separates the layout of the Web site from the content.

Supports dynamic page generation via Active Server Pages.

Distributes processing away from the Web server.

Handles load balancing.

departmental Web sites and intranets. "The ability to have someone without the HTML expertise maintain the site is very important," he says.

This feature of WebWare Lite was a big attraction for the Pueblo Nation of New Mexico, which recently awarded a multimillion-dollar

contract for the development of a Web site that will link its governmental offices, support broadcasts of live events and educational courses, and provide an electronic marketplace for selling tribal arts and crafts. The winning contractor on the bid, Virtual Broadcasting of Albuquerque, is using WebWare Lite to build the site.

"One of the requirements in the contract is to allow secretaries to update the information on the Web site," says Scott Thompson, president of Virtual Broadcasting. Thompson says most of the personnel in the Pueblo government lack advanced or technical degrees. "They can't afford high-tech engineers to make minor changes to their Web site."

Thompson says WebWare Lite also reduces the cost of developing the Pueblo Nation Web site. "Without Today.com, our bid would have been

three to five times more," he claims. With WebWare Lite, "we can design a template page and then generate all of the pages."

WebWare Lite works with various HTML editing packages, including Microsoft FrontPage and Active X design systems, such as Microsoft Visual InterDev. It supports XML and will support Word 2000, which converts documents to XML instead of HTML. The package works with any Open Database Connectivity/OLE database, although it ships with a runtime version of Microsoft's SQL Server.

WebWare Lite costs \$750 and is available direct from Today.com. Next summer, the company plans to ship an e-commerce edition that supports credit card purchasing and invoice shipping. Later in the year, the company will release an enterprise edition that adds support for personalization, membership, e-mail and chat.

Today.com: www.today.com

Car makers,
continued from page 41

also force auto-parts suppliers to prepare catalog data based on multiple formats or learn to use new technologies, such as XML, instead of EDI, Howle says. That's going to burden them with new expenses, suppliers say. For service providers, such as Harbinger, there's the opportunity to offer auto-parts suppliers the kind of new services they may need to meet GM's and Ford's demands.

Complicating this business-to-business portal scenario was the news from Harold Kutner, GM's group vice president of worldwide purchasing, that suppliers will have to use the Automotive Network Exchange (ANX) to reach GM's TradeXchange instead of using the Internet. Using the ANX costs about 10 times as much as using the Internet and requires special IP Security (IPSec)-based encryption equipment.

"GM is going to deal on this site through ANX," Kutner says.

■ **Complicating this business-to-business portal scenario was the news that suppliers will have to use the ANX to reach GM's TradeXchange.**

"TradeXchange will be a requirement for our suppliers, and that is the only way we'll do business."

The expensive ANX is a private IP network from five select ISPs approved by Tel-

cordia, the so-called ANX overseer, which monitors ANX application usage and decides which IPSec encryption equipment can be used on it. Designed by the Big Three auto makers, it is now being opened up to other industries as well, such as steel and health care.

Unlike GM's and Ford's competing e-commerce portals, at least ANX has been a group effort based on a common set of protocols. For more than a year, GM, Ford and DaimlerChrysler have harangued their suppliers to use it, though until recently there have only been a few CAD/CAM and mainframe applications accessible on it. The car makers promise to move their EDI applications onto the ANX for IP-based EDI.

If the auto suppliers only had ANX and the upcoming GM and Ford portals to worry about, it might not be so bad. But on top of that, the hodgepodge of ancient X.25 dial-up systems for supplier notification and EDI that ANX was supposed to replace never really went away.

Suppliers — who have no choice but to kow-tow to the Big Three on their network demands — still have to support these legacy systems. GM, in fact, spent the last year forcing its suppliers through a huge migration from the ANSI X12 EDI format to the international EDIFACT format for purchase orders and other electronic documents. "Now they're going to be requiring them to do an XML conversion," says Howle regarding GM's e-commerce portal.

"We still have the dial-up and the VANs," confirms Rob Burns, business technology manager for auto parts supplier Magna International. "But we are hearing rumblings now from GM that the old network connections are finally coming down."

At Magna, the Ford and GM e-commerce portals sound like a "good thing, but changing is always hard," Burns says. For the much-put-upon auto suppliers, e-commerce portals will be another demand they'll have to meet to stay in business. ■

BindView,
continued from page 41

then made a batch correction from the report results.

The key feature for bv-Control is Resultant Set Analysis, which manages group policies and permissions within Active Directory. The tool lets users boil down policies and permissions by user to analyze for conflicts. For example, a user may be denied permission to a directory object, such as corporate salaries. But that same user may have access to that object through membership in a directory group that has access to the object.

Another key for bv-Control is automatic analysis of Active Directory replication. The feature reports on what is being replicated, how it is replicated and on any replication problems.

BindView's bv-Control for Active Directory is expected to ship on Feb. 17. Pricing has not been announced.

BindView: www.bindview.com

Is the router on the left really worth twice as much as the one on the right? You decide.

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	56K, T1	✓	✓
ROUTING	OSPF	✓	✓
	RIP	✓	✓
	Legacy Protocols	✓	✓
VPN	IPSec	✓	✓
	Firewall	✓	✓
	NAT	✓	✓
	Internet Telephony Ready	✓	✓
	Remote Management	✓	✓
PRICE		\$3,895	\$1,947

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'Net Insider . Scott Bradner

WHEN IN WASHINGTON...

The Internet Engineering Task Force went to Washington, D.C., earlier this month and did what the Washingtonians do most often —

played politics.

We tried to figure out if we should put special features into our protocols to support wiretapping and other

legal intercept methods. My view is that we came away with little support for the idea that the IETF should go out of its way to support legal intercept. But at the same time, there was not a consensus that we should prohibit all discussion of the topic.

The issue of the IETF doing work

on legal intercept technologies came up as a byproduct of the extensive work that the IETF is now doing in the area of IP-based telephony. It should not come as a surprise that in many places around the world, including the U.S., telephone companies must be able to provide law enforcement with information about phone calls, such as who is calling whom and how long the call is, along with the audio stream from selected calls. Companies that build telephone equipment feel they must add features to their equipment to support these activities because their customers must be able to access such features.

Some traditional telephony standards organizations have supported this by adding intercept features to their telephony-related standards. Because the future of the telephone seems to be intertwined with the Internet, it is inevitable that the primary Internet standards organization would be faced with the issue sooner or later.

In the IETF's case, some participants in one of the working groups focusing on a new standard for communication between components of a distributed phone switch brought up the wiretapping issue. (Not the FBI, as was reported in some places.) Because adding features to support wiretapping would be an important change in direction, the IETF's management decided to have a public discussion before determining if the working group should go ahead.

A new mailing list was created (www.ietf.org/mailman/listinfo/raven) for this discussion. Close to 500 people subscribed to the list and about 10% of those sent at least one message to the list. The discussion on this list was a precursor to one held during the IETF plenary in Washington.

Twenty-nine people spoke during the plenary session. Opinions ranged from libertarian ("governments have no right to wiretap") to pragmatic ("it will be done somewhere, so best have it done where the technology was developed.") At the end of the discussion, there was a show of hands to indicate opinions: Should the IETF add special features, not do this or abstain? There was not much support for adding the intercept features, but enough people abstained that the IETF could not gauge a rough consensus (80% or more) against all such activities.

This was an interesting example of participatory democracy, and like many others, did not produce a clear result.

Disclaimer: Harvard has watched various forms of government come and go, and did not express an opinion on this issue.

Bradner is a consultant with Harvard University's University Information Systems. He can be reached at sob@harvard.edu.



Practical VPN Deployment: The Next Step

Practical answers to real-life questions

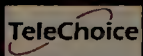
You know what VPNs promise: cost savings, business efficiencies and improved relationships with your partners. But once that's understood, are you prepared to deal with the technical issues of planning a full-scale VPN deployment enterprise-wide? Integration issues, scalability, site-to-site viability, security, mission-critical performance and service-level guarantees are just a few questions you should be considering.

Practical VPN Deployment: The Next Step is a one-day seminar designed to give you a clear understanding of these technical issues and how to meet them head on. Seminar director Eric Zines, Senior VPN Analyst with TeleChoice, Inc., will explore the greatest challenges of VPN deployment, and provide solutions for doing so successfully. He'll also share the success stories of early adopters, including their trials and tribulations on their way to success.

6 Reasons Not to Miss This Seminar

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2. Learn how others are growing their VPN pilots to support mission-critical applications.
3. Understand how to grow your VPN to match your performance requirements.
4. Learn to integrate existing security measures with your VPN plans.
5. Understand how to deploy the different types of VPNs: remote access and site-to-site.
6. Have your key questions answered by the leading VPN vendors and service providers.

Learn from the Leader



Directed by
Eric Zines, TeleChoice, Inc.



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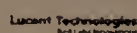
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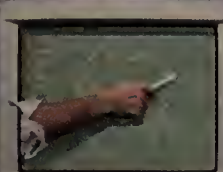
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Technology Update

An Inside Look at the Technologies
and Standards Shaping Your Network

Ask Dr. Intranet

By Steve
Blass

We've added
NetWare 5
servers with mul-
tiple CPUs to our
intranet and have run
into a CPU utiliza-
tion problem. For

long periods throughout the
day, one processor is pegged at
100% and the other is sitting at
0% utilization. How do we find
out what resources are using
the processors and if there is
any way to load balance and
use both processors. We've
tried using the command MON-
ITOR -p to get information from
the system but haven't been
successful. Can you suggest
any utilities or scripts or con-
figuration guidelines or a Web
site we could reference?

Via the Internet

Go to support.novell.com and
look at the High Utilization docu-
ment HIGHUTL1.EXE (TID294
1108). All the recommendations
in this document apply to Net-
Ware 5; however, the Processor
Utilization section of MONITOR
no longer exists, due to the
redesigned kernel. For Monitor
5.19, which ships with NetWare
5, load MONITOR->KERNEL and
select Applications, then select
Applications again and press F4
to view the busiest threads.

With NW5SP1.EXE or later
service pack, you can view sim-
ilar information in Monitor 5.22.
Load MONITOR, select KERNEL
and choose THREADS from the
Kernel Options. The screen will
display the Busiest Threads and
Interrupts on Processor 0. The
listing is constantly sorted with
the busiest process at the top. If
the processor is running MPK,
F4 will cycle to the previous
processor and F5 will switch to
the next processor.

Blass is a network archi-
tect at Sprint Paranet in
Houston. You can reach him
at drintranet@paranet.com.

DSML helps directories work together

BY TODD HAY

Soon people and machines on the
Internet will move beyond
downloading Web pages, launch-
ing full-blown Web applications or work-
ing in monolithic enterprise applica-
tions. Instead, they'll use so-called Web
services, which are platform-neutral
application nuggets automatically assem-
bled for each user or machine.

Companies are embracing this change
by breaking up enterprise applications
into small components of functionality,
wrapping them in XML and preparing to

how to execute them, what the results
will be, who wrote them and how to pay
for them. Combined with the power of
XML, this information enables whole
new classes of individually tailored appli-
cations for e-commerce.

DSML 1.0 — now being reviewed by
the Organization for the Advancement of
Structured Information Standards, the
World Wide Web Consortium and the Biz-
Talk initiative — is being pushed by Bow-
street Software, IBM, Microsoft, Novell,
Oracle and the Sun-Netscape Alliance.
DSML defines the XML schema for
describing directory structure and data.

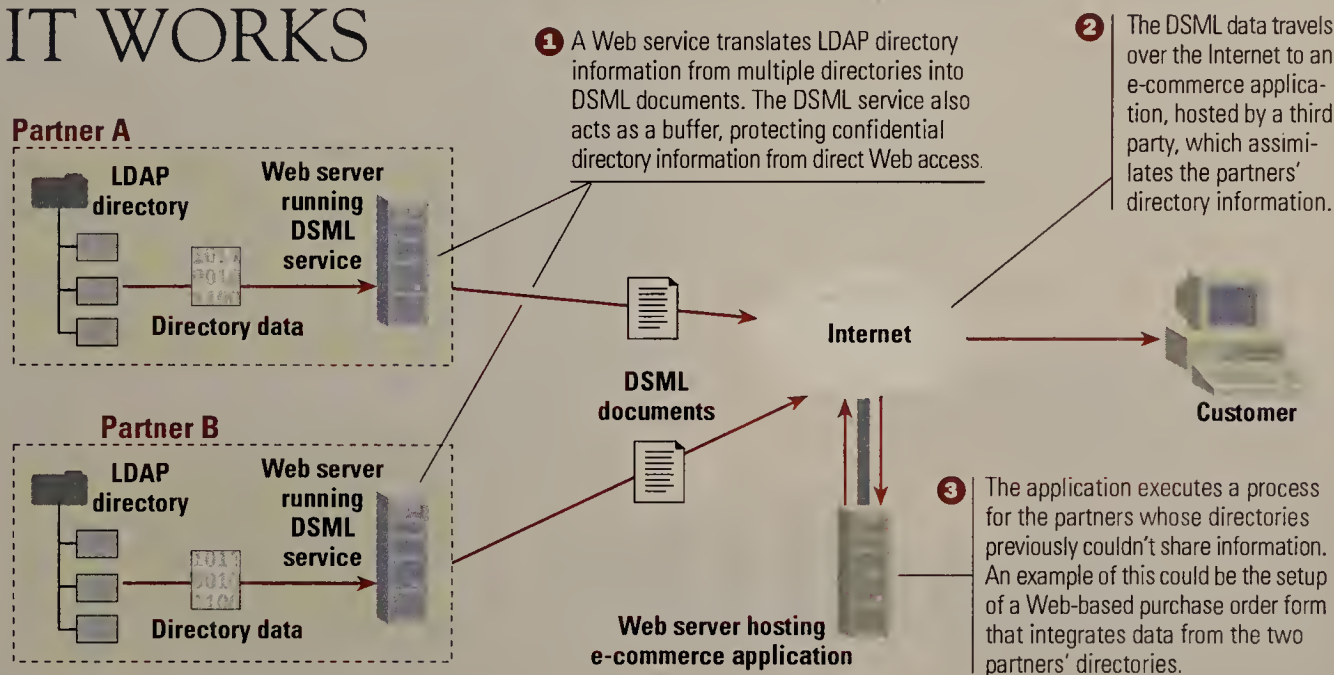
developers to write new code to make the
directories work together. DSML recon-
ciles the differences by providing a third
language both directories speak, XML.

A real-life DSML transaction might
begin with an XML-enabled application
making an HTTP request to a Web service
that queries a directory through LDAP or
directory APIs. The resulting DSML docu-
ment (containing directory data) is re-
turned to the XML application over the
Web. The application then parses the XML
using standard Extensible Stylesheet Lan-
guage to integrate the directory data into
a purchase order form, for example, with-

HOW IT WORKS

DSML

An example of
how a DSML
Web service
can combine
data from
disparate
corporate
directories to
be used in
e-commerce
transactions.



share them with customers and partners.
As this transformation plays out, network
managers will still need to help users find
the Web services that will carry out busi-
ness processes.

Directories will provide that help. Direc-
tories are being enabled to operate across
corporate boundaries, pointing users to
services wherever they exist. To accom-
plish this work, directories need to be able
to speak a common language. Enter Direc-
tory Services Markup Language (DSML),
the emerging standard that expresses
directory content in the Internet's lingua
franca for commerce — XML.

Directories typically store and manage
information about each user in an enter-
prise — including names, addresses,
phone numbers and access rights. Direc-
tories are increasingly storing meta-
data about available Web services, what
they do, what they require for inputs,

Applications consume DSML docu-
ments as they would XML because DSML
is a subset of XML. Applications can trans-
mit DSML documents to other DSML-
enabled applications on the Internet. This
process effectively extends the Light-
weight Directory Access Protocol (LDAP)
across firewalls to any Internet transport
protocol — such as HTTP, FTP or Simple
Mail Transfer Protocol — a major benefit
for business-to-business efforts.

Standard tags defined by DSML include
objectclass, entry, attr (for attribute) and
name to refer to well-established directory
analogs. To understand how these tags
work, consider two directories: one for
Vendor A and one for Vendor B. Directory
Vendor A uses "FullName" to describe the
attribute in a directory that is the name of
a company's employee. Directory Vendor
B uses "Name" alone for the same purpose.
Traditionally, this difference would force

in the application. With DSML, an XML
application could request data and
schema information from directories and
consolidate this into one document.

To DSML-enable their directories, net-
work managers will use extensions to
their current directories that simply
return query results in DSML. Querying
isn't currently defined in DSML 1.0, but
the DSML working group (DSML.org) is
already working on a query markup for
DSML 2.0. Either way, LDAP and vendor
APIs will remain in place, and directories
will continue to operate in their tradition-
al manner, except with new business-to-
business Internet commerce capabilities.

Hay is Web automation system prod-
uct manager at Bowstreet Software
and a lead author of the DSML 1.0
specification. He can be reached at
thay@bowstreet.com.

Gearhead — inside the network machine . Mark Gibbs

GETTING IT ACROSS WITH FILE TRANSFER PROTOCOL

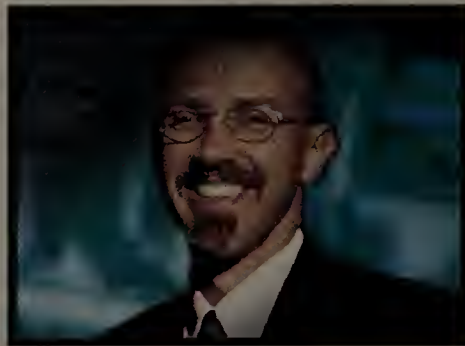
That's all very amazingly cool about FTP tools, but what exactly is FTP?" said a reader following the "Gearhead" column, "A better way to FTP" (Oct. 4).

Glad you asked. This question leads us into a couple of interesting digressions (something that Gearhead is partial to as is his evil twin who pens the "Backspin" column of this august journal).

To begin with, FTP stands for File Transfer Protocol. It is a TCP/IP application-layer protocol for transferring file data from one computer to another over a network.

As with all Internet protocols, the assumption is that FTP uses the Transmission Control Protocol (TCP) or User Datagram Protocol (UDP) — both TCP/IP session protocols that are, in turn, transported over an Internet Protocol (IP) network. Of course, this is an assumption and in fact you could run FTP over any other network architecture.

The ability to run FTP (or in principle, any other protocol) over any network architecture means that it is easy to defeat a firewall with the help of an accomplice.



If the accomplice can set up a program inside the organization that speaks, for example, HTTP and behaves, as far as the firewall is concerned, like a Web browser, then they could handle any payload they pleased in the packets.

This is an interesting area of security and one that represents a very significant problem if you are trying to build really secure networks. The answer is to use a firewall that doesn't allow you to access stuff out on the Internet directly. This is really a complex topic that we'll have to leave for another column.

So now that Gearhead has made you completely paranoid, we'll get back to our subject: FTP. As we said, FTP is for moving files from one

machine to another. And of all the file transfer protocols out there (and there are quite a few), FTP is one of the simplest.

FTP uses two ports for communications — by default port 20 for data transfers and port 21 for commands. All communications are normally done over TCP, which provides a reliable channel — something that is highly desirable when you're moving data around.

File transfers can also be performed over UDP using a protocol called Trivial File Transfer Protocol (TFTP), which is a sort of simple cousin to FTP.

TFTP does not use any form of authentication, and by using UDP, it is potentially faster than FTP, although it is also less reliable. TFTP is commonly used for loading applications and bootstrapping diskless systems.

It is important to know that you usually interact with FTP through something called a Protocol Interpreter that is part of your FTP client. This component communicates with the Protocol Interpreter on the remote server. When you actually move data around, your

Protocol Interpreter is working with your local Data Transfer Process (DTP) and through the remote Protocol Interpreter working with the remote DTP.

The two DTPs then interact and perform the file transfer.

When your FTP client creates a session with a server, the server responds with a status message along the lines of "220 servername FTP server." It is worth noting that the only constant part of this transaction is the code "220" — everything else in the message is implementation-dependent.

At this point, the server will usually ask you for a name and a password. If anonymous access is allowed, then the server will offer you a default name. For the password it is the convention to use your e-mail address. If a real login is required, you will need to know the details of a valid account on the server.

After that . . . well, next week we'll look at what else happens when you FTP.

Transfers to gh@gibbs.com.

Network World Fusion Spotlight
News, tips and tools from our Web site

Frame Relay Search

Need to look up information on a frame relay vendor? Want to look up something about the technology? Have we got the search engine for you!

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articles and our newsletter, *Network World Fusion Focus on Frame Weekly*. This means you're just a keyword away from everything from white papers and technology overviews to service offerings.

DocFinder: 5625

Foo' Bar: Usage trackin'

Those techie wonders at Motley Fool are back with another installment in their series on running a large Web site. This month, they look at usage analysis software. To

make your site as useful (and popular) as possible, you need to know where your users are coming from, where they're spending the most (and least) time on your site, and what they're doing there. What should you look for in this software? The fools tell all. Then follow the links to our review and buyer's guide on Web-management tools (and to past Foo' Bar columns on other aspects of heavy-duty site design and operation).

DocFinder: 5626

In the Works: VPNs

November is intro month for our new "In the Works" column. This week, we introduce Paul Hoffman, director of both the VPN Consortium and the Internet Mail Consortium. Hoffman starts out with a look at VPNs, defining what they can do — and can't. Read his discussion, then follow our links for even more info.

DocFinder: 5628

Help Desk: Passwords

It's the bane of help desks everywhere: end users who can't remember their network passwords. A Fusion user with a NetWare 5 set-up wonders why he couldn't set up a system similar to the ones that are found on Web sites that require registration: Users type in their name and the system mails them their password. Suggestions?

DocFinder: 5634

Venture database

The latest PricewaterhouseCoopers/*Network World* venture capital survey came out last week. No big surprise — most of the venture capitalist money is flowing into dot-com start-ups. Search more than two years' worth of data from the survey, or download a spreadsheet with the results from the third quarter of 1999.

DocFinder: 5635

Tech Update update

Every week, Tech Update tells you about a new networking technology or gives an in-depth explanation of an existing one. Yes, of course we have an online Tech Update library, where you can find past updates along with links to additional info. For example, this week's update on Directory Services Markup Language provides a link to a more detailed overview of the markup language. It all starts at:

DocFinder: 5629

Help Desk
Ron Nutter is standing by to answer your networking questions. Read his column every week on Fusion. *DocFinder: 2450*



**There's a word for a phone system that
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eNetworks

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Editorial

Linux vendors get a Showdown all their own

Two weeks ago, I told you about the Operating System Showdown — a presidential-style debate among the top network operating system vendors that *Network World* will be staging on Wednesday, Jan. 26 at ComNet in Washington, D.C. I'm waiting to hear back from Microsoft, Sun, Novell, Red Hat and the Santa Cruz Operation on which speakers they'll be sending to this special featured session.

Well, I hope the folks at Red Hat are looking to rack up some frequent flyer miles because I'm also challenging the company — along with SuSE, Inc., TurboLinux and Caldera — to take part in a special Linux Showdown to

be held at the LinuxWorld Conference & Expo in New York.

This Showdown will give you the opportunity to see these leading commercial suppliers of the Linux operating system in action, fielding questions from a panel of industry experts, each other and the audience. *Network World's* Linux Showdown will be held on Wednesday, Feb. 2 from 4:15 to 5:30 p.m. at the Jacob Javits Convention Center.

We're challenging the four top Linux server suppliers — based on market research from International Data Corp. — to send a top technical executive to take part in this no-holds-barred debate. The vendors will have until 5:30 p.m. on Tuesday, Dec. 8 to accept or decline our challenge and to let us know who they'll be sending. If any vendor declines or fails to respond on time, we'll pick a competitor to fill the open slot on the dais.

The Showdown format helps strip away the marketing hype surrounding an important technology and forces vendors to answer direct, difficult questions from the experts and one another. The Showdown is a great way to highlight differences in strategy and product lines. Our expert panel includes Nick Petreley, editorial director of the LinuxWorld online publication (www.linuxworld.com) and Bob Brown, news editor at *Network World*.

As we wait to hear from these purveyors of Linux, I'd love to hear from you about the questions you want answered. What concerns you about running Linux in your enterprise? Also, I'm open to adding a fifth Linux vendor if you can provide me with a compelling reason to do so. Drop me a note at the address below.

But for now, Red Hat, Caldera, SuSE and TurboLinux, are you up to the challenge?

— John Gallant
jgallant@nww.com



Message Queue

TARGETING Y2K

Your article "Y2K target keeps moving" (Oct. 18, page 1) provides some of the most useful, realistic and objective information I have read on the Y2K situation in months. I recently left a company that waited until this summer to begin its Y2K readiness program, mostly because it couldn't find a way to bury the costs within new or existing contracts. This is just the type of nonurgent response to the Y2K problem that will cause many small and mid-size businesses great pain come January.

Lance Johnson
Co-founder and chief operating officer
DataAge Technologies
Glendale, Calif.

GRAPHIC THOUGHTS

Your article on Quantum Bridge's passive optical networking technology ("Start-up's fiber gear could slash T-1 prices," Oct. 25, page 85) has an accompanying graphic that misleads readers in a crucial area.

The text of the graphic and the article correctly state that the same signal reaches all customer sites. Yet the graphic art makes it appear that the signals are being separated in transit, which cannot be done with passive units.

Martin Gizzi
Fredericksburg, Va.

PRIDE IS KEY

In your feature "Managed WAN-a-phobia" (Oct. 25, page 59), I found the statement that Fortune 50 enterprises "seem determined to keep WAN management in-house, even though networking isn't their core competency" to be rather misleading.

For this to be a valid argument against "insourcing," networking would have to be not only a non-core competency, but these organizations would have to be just plain bad at it, which typically is not the case.

The critical point the article overlooks is pride in ownership. Many people in the technical work force

today are better at what they do than others simply because they care. The critical component in successful insourcing is fostering and developing that sense of ownership, responsibility and accountability for the network.

Shane O'Donnell
Senior consultant/instructor
Onion Peel Solutions
Raleigh, N.C.

Regarding your feature "Managed WAN-a-phobia": I see pros and cons throughout the article. What I don't see is a way to transition from self-managed to outsource-managed WANs. The impact on the people who manage the WAN infrastructure now may be significant when the change occurs.

Jeff Host
Federal Way, Wash.

GIVE AT&T A CHANCE

In his letter to the editor "Open up, AT&T" (Nov. 1, page 56), Harry Frost advocates open cable access. He writes "without some kind of open access clause, I will lose my ability to choose the ISP that meets my needs; in effect, I will lose my right to choose the best service for the best price."

This is a curious statement on two counts. First, cable subscribers can access their existing ISPs as before, though a second fee may be imposed. It is hard to see how this translates into lack of access.

Second, providing local and long-distance telephone service through cable access provides a level of competition where none has existed. To offer carrier-grade telephony, broadband high-speed data service and video, AT&T is pouring billions of dollars into increasing the reliability and reach of hybrid fiber coax into the nation's neighborhoods.

This is a high-risk gamble with scant guarantee of success. Competition from digital subscriber line and the possibility of failure cloud the horizon. The voices clamoring for open access do not participate in this risk; it is shouldered by AT&T's shareholders alone. Give AT&T a chance to make it work before shooting out the tires.

Ken Fowler
Cable systems consultant
Rockaway Township, N.J.

Send letters to nwnews@nww.com or John Dix, editor in chief, *Network World*, 161 Worcester Road, Framingham, MA 01701. Please include phone number and address for verification.

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- Letters about Windows Registry and other topics.

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RENT-AN-APP FIRMS ARE HOT TARGETS FOR INVESTORS

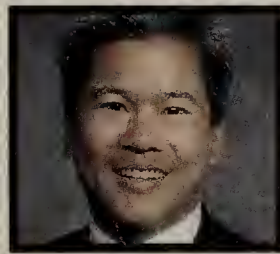
One of the hot topics in the venture community these days is the way the Internet is changing how companies will deploy new applications in the future. In a kind of "Back to the Future" movement, what used to be called outsourcing of applications in the old mainframe world is now called netsourcing. Enterprises that abandoned outsourcing in favor of internally developed applications or large enterprise resource planning software suites now are looking into netsourcing, using application service providers (ASP) for even mission-critical applications.

This "rent-an-app" approach has created opportunities for venture-backed firms that provide application-hosting services. Rather than investing a lot of money in packaged software companies, the venture community is putting its cash into ASPs. Mayfield Fund has invested in several ASP start-ups. One, Instill (www.instill.com), provides e-business services for the food service industry. Another, Intira (www.intira.com), provides IT and networking services through its own data broadband network and utilities managed by its Serv-

ice Management Center. Other start-ups are adding Web hosting as an alternative to conventional sales processes. Amplitude Software (www.amplitude.com) has a hosted version of its resource scheduling and calendaring applications. MarketSoft (www.marketsoft.com) offers a hosted version of its marketing automation software.

A number of venture-backed ASPs have focused their services on small and midsize businesses that do not have the resources to run expensive enterprise software suites. Firms that fall into this category include Corio (www.corio.com), eCompany (www.ecompany.com) in accounting and Agillion (www.agillion.com) in customer relationship management.

Small businesses, however, are not the only candidates for hosted applications. Enterprise network managers know the pain and expense of buying and implementing enterprise-scale applications. The appeal of letting someone else manage the applications and absorb the problem of upgrades and changes is real. That is why firms such as Oracle and Ariba are moving to a



hosted service model.

There are a number of issues to examine when considering using an ASP. One is time-to-market. The time saved by being able to add an application by going online may translate into a competitive advantage that needs to be figured in when considering the cost of using an ASP. The Web site performance of an ASP is also an issue.

How secure is the site? What is the quality of service? What are the traffic loads? Another consideration is whether you want the ASP to host the application on its servers or to have the application hosted on an on-site server but managed by the ASP.

Whether the Internet application involves connectivity or services that would normally have been handled within an enterprise, netsourcing is becoming a viable choice that you should evaluate seriously.

Fong is a general partner of Mayfield Fund, a venture capital firm in Menlo Park, Calif. He can be reached at kfong@mayfield.com.

DUOPOLIES CAN BE JUST AS BAD AS MONOPOLIES

Lightning struck the computer industry earlier this month with the publishing of U.S. District Judge Thomas Penfield Jackson's findings of fact in the Microsoft antitrust trial. Jackson's findings supported the government's case that Microsoft is a monopoly, based on the principle that a company that holds a market share of greater than 70% generally is considered to be a monopoly. This fact does not, in itself, mean that Microsoft has violated antitrust laws, but it is an essential first step in that process. The findings also stated that due to its monopoly position, Microsoft could charge a price above that which could be charged in a competitive market.

Jackson's findings set the stage for a pending issue for the government — approval of the MCI WorldCom/Sprint merger. This deal will create an interesting predicament in that if you add together the long-distance market shares of AT&T and the merged MCI WorldCom/Sprint entity, the net result is greater than 80%. Therefore, the merger will create a duopoly in the long-distance marketplace. Is a duopoly as potentially anticompetitive as a monopoly? It most certainly can be.

The point can be made that long-distance prices soon will approach zero cents per minute, making the anticompetitive duopoly argument moot. How then will these companies make money? Through feature services that go along with long-distance calls and integration with data services. Therefore, control of customer market share is still a predominant issue. The long-distance duopoly has the potential to be anticompetitive, controlling the customer base just like Microsoft has.

Past history has indicated that keeping an industry



sound requires the participation of at least three companies to create a competitive environment. This was the case with the auto industry when the government supported loans to Chrysler to keep a third party in the market with Ford and General Motors. Yes, the regional Bell operating companies and carriers such as Qwest Communications are in the long-distance business, but can they break the duopoly's control of the market by any methodology other than lower prices? With zero cents per minute as a near-term goal, price cannot be used as a market penetration mechanism.

Other communications service markets face duopoly situations, as well. One is the private line industry, which has a history of high prices and questionable rate synchronization from competing vendors. Sprint was always the aggressive low-cost provider. Will its rate structures now conform to MCI WorldCom's, or vice versa? The frame relay and ATM circuit markets also are potential duopoly candidates.

Another area of concern is the Internet backbone access market. As part of the approval process of MCI's merger with WorldCom, MCI's Internet back-

bone access had to be divested due to the merged entity having 82% of all Internet backbone access.

The MCI WorldCom/Sprint entity will have almost 70% of all Internet backbone access, so another divestiture will be required to remove a potential monopoly situation.

Some aspects of the MCI WorldCom/Sprint merger are not worrisome. MCI WorldCom currently offers no wireless service, so the addition of Sprint's will be good news to users looking to go wireless. Likewise, Sprint's local operating company business will become a cash-positive asset to MCI WorldCom. Sprint's international participation in Global One will be sold to France Telecom.

But in the end, the winner in the MCI WorldCom/Sprint merger will be the shareholders, not customers. The merger of MCI and WorldCom has yet to produce customer satisfaction, and now we have another merger at hand.

In his comments to analysts on the recent frame relay outage, MCI WorldCom Chairman and CEO Bernie Ebbers stated that mergers and acquisitions are bad for the industry. In an ironic twist, Ebbers concluded that a major contributing factor to Lucent's switch problems was an overzealous industry focus on mergers and acquisitions, typified by Ascend's acquisition of Cascade Communications and Lucent's acquisition of Ascend. If Ebbers' beliefs are that strong, he might want to think about WorldCom's mergers with MCI and Sprint and their negative effects on customers.

Dzubeck is president of Communications Network Architects, an industry analysis firm in Washington, D.C.

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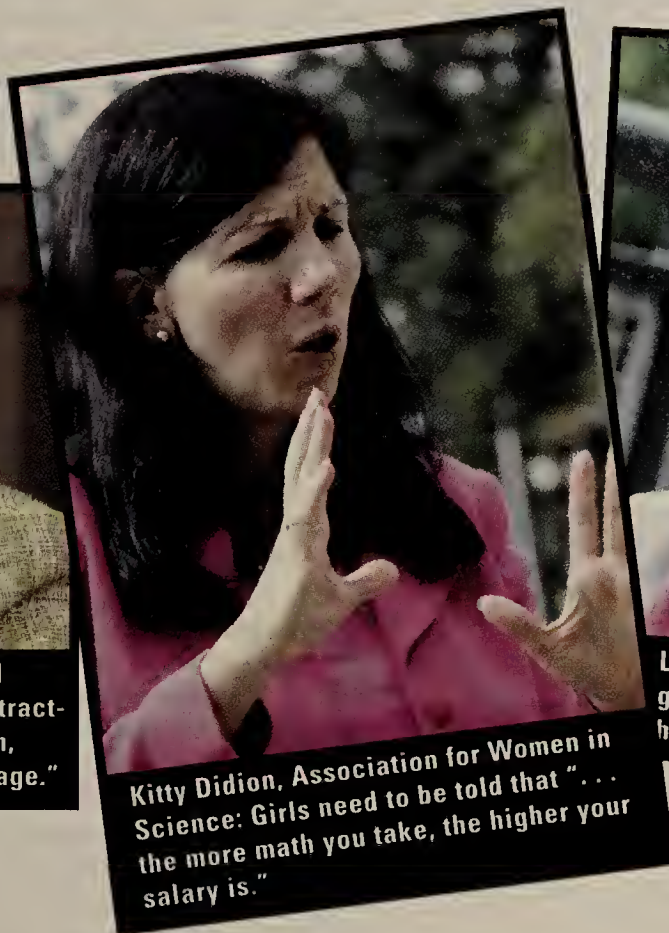
THE CRITICAL SHORTAGE OF WOMEN IN IT



Kelly Carnes, Commerce Department: "The nation cannot afford to be wasting the talent from half our population."



Anita Borg, Institute of Women and Technology: "... if we had been attracting women at the same rate as men, there wouldn't be a [worker] shortage."



Kitty Didion, Association for Women in Science: Girls need to be told that "... the more math you take, the higher your salary is."



Linda Scherr, IBM: "Companies will go out of business because they don't have the technical people they need."

PHOTOS: KATHLEEN KING

Reversing downward spiral in ranks of female IT workers is critical to solving technology worker shortage.

BY SHARON GAUDIN

White House, Congress look for answers

A Congressional committee has been studying the drop in the number of women in IT for the past year. U.S. Rep. Constance Morella (R-Md.) spearheaded the creation of the committee, which next April is slated to deliver a report that will outline the problem and list ways business, government, the education system and parents can work together to solve it.

A similar report is expected from Arthur Bienenstock's White House Office of Science and Technology Policy later this month. Bienenstock says he has been working with the Clinton administration and leading high-tech vendors on ways to tackle the problem.

The IT worker shortage is fast becoming a crisis that could threaten this country's global technology leadership and economic strength, according to industry observers and government officials.

And many argue that the solution is to bring more women into the IT work force.

"If we continue to utilize the talents of American women — virtually half the population — at the level we are now, we will not have the workers we need in this country," says Arthur Bienenstock, associate director of science in the White House Office of Science and Technology Policy. "Science and technology are critical to our ability, as a country, to maintain our standard of living, the value of the dollar, even national defense. This could very well be a problem for us going ahead. The way out of it is largely to have more women in science and technology."

And that's a critical step — for women and the IT industry, according to Anita Borg, president of the Institute of Women and Technology, a nonprofit agency in Washington. "There's all this talk about worker shortages, but you can make the argument that this is where the shortage comes from," Borg says. "The numbers say if we had been attracting women at the same rate as men, there wouldn't be a shortage."

A U.S. Department of Commerce report says only 9% of engineers in the United States today are women. That same report shows that women only represent 11% of Microsoft Certified Professionals, 26.9% of systems analysts and computer scientists, and 28.5% of computer programmers.

In fact, the numbers indicate that the IT gender gap has gotten worse over the past 15 years. For example, in 1984, 37% of computer science degrees were awarded to women. By 1998, that number had dropped to 16%.

"It's noticeably decreasing," says Martha Daniel, an 18-year IT veteran and CEO of Information Management Resources, Inc. (IMRI), an IT staffing, consulting and outsourcing company in Costa Mesa, Calif. "I first came through in the late '70s and '80s, and there used to be a lot more women in the field. It's frustrating, and it's sad for me."

The root of the problem

There are several reasons why women aren't joining the IT ranks and why those who do are not staying. According to industry analysts, here are the key issues:

- Some teachers, guidance counselors and parents are still guiding girls away from science and math classes. In fact, Bienenstock says his own daughter, who excelled in math, was discouraged from taking math classes.



"We still operate under the societal stereotype of what's appropriate for women and what's appropriate for men. How many families encourage their daughters to be engineers and computer scientists?"

Arthur Bienenstock, White House Office of Science and Technology Policy

- Most science teachers — and hence role models — are men. For example, at the university level in the U.S., 94% of the engineering faculty is male.

- The stereotype of the geeky IT worker with the pocket protector, high-water pants and taped-together glasses is a tough one to swallow for teenage girls, especially those who may be wrestling with a general drop in self-esteem that tends to occur at that age.

- The male-dominated industry can be a lonely and tough old-boys-club to break into. A female manager at a Fortune 500 company recalls an incident that occurred after she had won a promotion. She was having a pleasant conversation with a male colleague prior to a meeting. As other participants entered the room, the man abruptly flopped on the floor and shouted, "Just walk in your high heels right up my back to your next promotion."

- Women working in IT earn a fraction of their male counterparts' paychecks, averaging 72 cents on the dollar for female network professionals, according to the 1999 Network World Salary Survey.

- The long hours often expected in the booming high-tech industry are difficult to balance with family responsibilities.

Ileana Streinu, assistant professor of computer science at Smith College in Northampton, Mass., became pregnant with her first child while still a student. She recalls a student colleague saying to her: "Ah, I see you've given up mathematics for babies." Of course, she did not give up math and today teaches computer science to an all-female student body.

Teresa Klein, a project manager in engineering software at IBM, tells a similar tale of teachers discouraging her from taking calculus. At one point, a college professor told her, "A sorority girl like you doesn't have any business taking computer science." Klein persevered and graduated on the dean's list.

"We still operate under the societal stereotypes

of what's appropriate for women and what's appropriate for men," Bienenstock says. The U.S. Department of Labor still lists IT as a nontraditional field for women.

These attitudes are particularly frustrating to the women who encountered them when they went through school and now have girls of their own in the school system.

"I just don't see what my friends and I expected to see at this point," says Gail McCarthy, director of strategic science and technology at Electric Power Research in Palo Alto. "Those of us who graduated in the '70s and early '80s thought we would be the last generation to go through this. We never thought our daughters would get negative messages about what they can be and what they cannot be."

Linda Scherr, director of Women in Technology at IBM, says it's a problem that needs to be caught early before girls begin opting out of key math courses and limiting their future options.

"When you're 13 even, you're making key decisions about what courses to take and what courses to opt out of," says Scherr, who has degrees in mathematics and computer science. "Then when you're 18, you start thinking about careers and money and by then it's too late. We've got to get girls in the pipeline from an early age."

Following the pipeline

Several proponents of that pipeline say it needs to follow women right through their careers because there's a high dropout rate for women once they do enter the IT field. They report that women are ignored in meetings, second-guessed despite years of experience and excluded from overseas teams because the host country doesn't want to work with women.

"I'm in a position where my job is to give technical advice to people. I can't tell you how often I have to put a man on the phone to repeat what I've

SOME COMPANIES GET THE MESSAGE

Some companies are working hard to add women to their IT ranks in an effort to diversify their work forces, create new products and fill empty positions.

NASA

The country's chief agency for space research is focused on creating future scientists — male and female. "We think it's a problem, and we do what we can to ensure diversity," says Nahid Khazenie, program manager for college and precollege science education at NASA in Washington, D.C. "Obviously, women get the short end quite often. We highlight women scientists at NASA to offer girls role models."

Khazenie says NASA invests heavily in reaching out to students, conducting more than 300 programs across the country every year, spending \$120 million on grants and educational programs.

It funds its own Education and Equal Opportunity division, along with the National Space Grant College & Fellowship Program, which provides tuition assistance to students studying math, science, technology and engineering. That program has awarded more than 12,000 scholarships and fellowships in 11 years — 43% of them to women. Khazenie also notes that 53% of NASA's summer high school research program participants are girls. Add to this NASA's weekly online showcase of outstanding NASA women on its Web site, www.nasa.gov.

Texas Instruments

"I have a hard time finding the skilled resources in the IT market," says Kim

Spencer, manager of Information Technology Services at Texas Instruments. "Diversity is welcome and needed so we can understand that there are different ways to solve a problem. We all bring something different to the table."

Texas Instruments is a sponsor of Women in Technology International (WITI), a professional association of women working in technology. The company also is active in local school systems, sending its female technologists into the schools to show off technology and its uses. "My daughter is an eighth grader, and she has started trying harder in math because she's interested in this now," Spencer says. "What will you use this geometry for? Now she has an answer."

IBM

With its own Women in Technology initiative, IBM is pushing hard to diversify its work force. "We have a societal stereotype that steers women away from IT," says Linda Scherr, program director for IBM's Women in Technology department. "If we can fix that, we can fix the shortage problem. I'm not talking about an H-1B visa, short-term plan. I'm talking about fixing this."

Scherr's 3-year-old initiative supports networks of technical women in an effort to negate any feelings of isolation. It also aims at providing female role models with a companywide platform. IBM sponsored the Conference for Technical Women last year, bringing 500 female technical leaders from IBM together from 29 different countries. IBM also is a strategic sponsor of MentorNet, a national electronic mentoring initiative connecting women who are studying engineering and related fields with women already in the industry.

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WOMEN IN IT

Survey: The gender gap in IT resources.

Reports: Increasing the number of women in IT.

Forum: Discuss and debate with article participants. Starts Nov. 29.

More: An entire page of links.

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just said so someone will take the advice seriously," says a female 22-year IT veteran and a systems analyst for a worldwide insurance company. "A lot of people just don't picture a woman in a highly technical position regardless of how much experience you have."

A program manager at a U.S. transportation company says her company is generally supportive of its female employees, but women are still regularly passed over for jobs in lieu of men with less experience.

"My company does a lot to encourage women in science and technology, but I cannot help but notice going into board rooms, that 99% of those board members are male," she says. "And when it comes to selecting members for boards and committees — people in decision-making, change-making positions — you don't see women."

She adds that the lack of women in high places only makes her more determined to get on those boards. "The more frustrated I get, the more I fight," she says. "It wasn't easy to get here, and I'm not going to give up because of anybody."

But not every woman is inspired by the dearth of women around her.

One application development manager for an Atlanta manufacturer simply got worn down after 12 years of fighting an uphill battle. A colleague once invited her to a conference simply to try to coerce her into sharing his room. She also was passed over for a promotion that would have taken her to another state because her bosses didn't think her husband would want to move.

"The best course for women is to withdraw their labor. That's key," she says. "If I were sexually assaulted, I would do something about it, but not for anything less than that. It's not worth the fight. Go find an employer who will treat you more equally."

This woman did leave her technical job for a position on the business side. "It's more acceptable to have a businesswoman than a female engineer," she says. "A lot of women in tech have been pioneers, but a lot of pioneers end up with arrows in their backs. After a while you wonder why you're bothering. The word 'pioneer' on a gravestone looks better on somebody else's than on yours."

The worsening shortage

The problem is that the U.S. economy can't afford to be driving away qualified IT workers. Approximately 400,000 IT positions are vacant in the United States today, according to Meta Group.

In Silicon Valley alone, there are reportedly 160,000 unfilled IT jobs, which cost high-tech companies there between \$3 billion and \$4 billion in lost production each year, according to the high-tech collaborative Joint Venture: Silicon Valley. Not even Microsoft can find enough IT workers; 10% to 15% of positions are vacant, with IT jobs being the hardest to fill, according to a company spokesman.

And it's only going to get worse as business dependence on high tech grows. The Commerce Department predicts the economy will generate 1.3

IT GENDER GAP

Women are underrepresented in most IT categories, except for data entry.

Electrical and electronic engineers: (603,000 total)

92%
8%



Computer systems analysts and scientists (1,091,000 total)

72%
28%



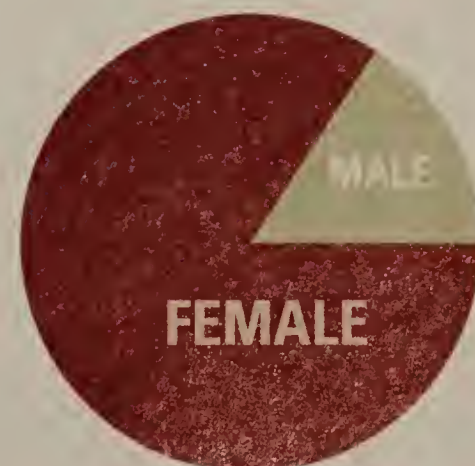
Computer programmers (558,000 total)

69%
31%



Data entry workers (690,000)

16%
85%



SOURCE: INFORMATION TECHNOLOGY ASSOCIATION OF AMERICA (ITAA), ARLINGTON, VA

SMITH COLLEGE PROGRAM BREAKS NEW GROUND

Smith is becoming the first U.S. women's college to offer a degree in engineering. The small liberal arts college in Northampton, Mass., welcomed its first engineering students this fall, though next year's freshmen will be the first class eligible for an engineering degree. And the classes have proven so popular that students are lined up to register.

"Companies are looking for women now," says Malgorzata Pfabe, head of the new engineering department. "If we have well-qualified engineers, they will get jobs. The nation cannot afford to not take advantage of so many human brains."

Pfabe says the reason Smith never offered an engineering degree before was more because of how engineering fits into a liberal arts curriculum than how women fit into engineering. "There was the thinking that liberal arts and engineering did not mix," Pfabe says. "We're getting beyond that."

Pfabe says she is glad she can reach out to female students who might not have been encouraged in math and science as much as they could have been.

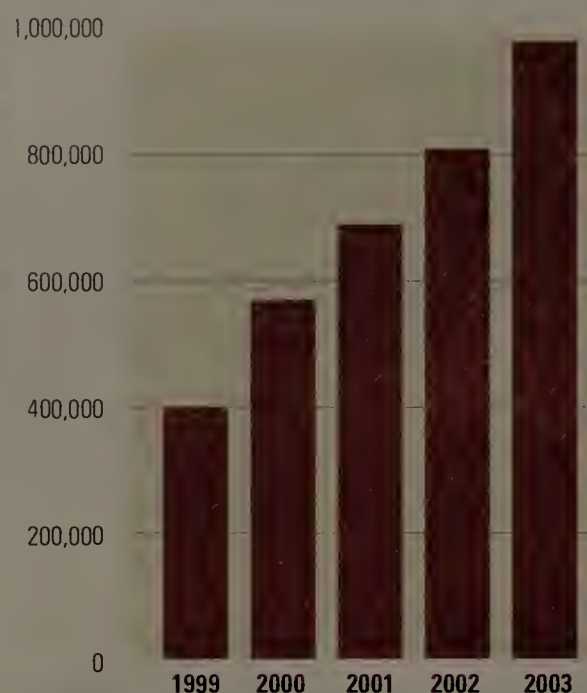
"Many students express to me that they had such a bad experience in high school with math and science," she says. "But they can do this. They just need to be taught well."

Ileana Streinu, assistant professor of computer science, says it's important to give girls and women strong female role models in the math and science arenas. "If a woman thinks she can only be a success as a model or an actress, that is the problem," Streinu says.

Heather White, a senior physics major at Smith, is turning her science interest into a potential career in programming. And she's not thinking about breaking down barriers as much as she's thinking about getting a job. "I'm starting to get really tired of academia, so I don't know about going to grad school and doing problem sets for the rest of my life," says White, who had a summer job writing code for FNreporter.com. "The market is ripe for people to dissolve the gender problems. You have all these jobs open and employers just want good, smart workers. I don't have to worry about getting a job, and that makes it a very, very attractive field."

Labor shortage expected to worsen

Meta Group estimates that there are currently 400,000 vacant IT positions. That number is expected to double by 2002. By 2003, nearly 1 million positions may be vacant.



SOURCE: META GROUP, STAMFORD, CT.

million new IT jobs by 2009. And American universities and colleges, with a reported 45,000 computer science graduates per year, are not feeding enough new workers into the field to even come close to keeping up.

Industry analysts say increasing the number of minorities in the field is another key piece of the puzzle. A predominantly white male work force could be disastrous for companies dependent on producing new technology and for those simply trying to run their businesses. "Companies will go out of business because they don't have the technical people they need," Scherr says. "There is the crisis."

And it's a coming crisis that the Commerce Department has been studying for the past two years. "Technology is the key to prosperity and economic growth, so we're looking ahead at a major, major problem for the United States," says Kelly Carnes, assistant secretary for technology policy

with the Commerce Department. "It's simple. The nation cannot afford to be wasting the talent from half our population."

The White House's Bienenstock says part of the problem is that the U.S. has been solely focused on covering this widening wound with a Band-Aid — H-1B visas, which enable businesses to bring in foreign workers for a limited amount of time. Largely because of high-tech lobbying, U.S. employers could hire 50,000 more foreign workers on H-1B visas this year than last, raising the fiscal 1999 cap to 115,000.

"We have been dependent on immigrants and off-shore workers for science and technology for at least 50 years," Bienenstock says. "Other countries are becoming increasingly aware of the value of those workers, and they will start keeping them in their own countries. That means they will not be available to come to the United States. We will have to fill our own jobs."

It will be harder to fill those jobs because as a country we have been so lax in training such a high percentage of our population, IMRI's Daniel says.

"We were thinking short-term fix," she says. "We could only bring in so many people from India in a given period of time, and we maxed that out. We had a potential work force here, but we didn't want to take the time to train them. So we brought workers in from other countries and ended up giving those skills to them. Now they'll go home and take their training home with them, and we're completely dependent."

Nancy Ramsey, co-author of *Futures of Women & Scenarios for the 21st Century*, says companies went into the H-1B visa process trying to save money. She says companies generally decided to bring in trained workers rather than invest in the American education system or deal with expenses such as childcare, which they often assumed would come hand-in-hand with an increase in female workers.

"How does it come to pass that we can go find people, spend the time and money to get them green cards, spend money to bring them and their entire families here and deal with language problems?" Ramsey asks. "But when it comes to a woman, who might have a child, that's an untenable situation. Women have the brains for this, so why aren't we getting them into the field? Why are we losing them?" ■

5 WAYS TO ADDRESS THE PROBLEM

1 The myth that girls are not as adept as boys at math and science needs to be wiped out in the minds of teachers, guidance counselors and parents.

"My wish is that people would truly believe in the fact that women are just as capable," says Nahid Khazenie, a program manager at NASA. "They may say that we are, but deep down in some of their hearts, they don't think we are as capable when it comes to math and science. . . . Girls need to know that's not true."

2 Girls need to be steered toward math and science classes, not away from them, in the critical early-teen years.

Kitty Didion, executive director of the Washington, D.C.-based Association for Women in Science, says, "You can elect not to take algebra and your guidance counselor can say, 'Don't worry your pretty head about it.' We need people to say that statistically it's shown that the more math you take the higher your salary is. People need to tell them that these decisions affect their whole future."

3 The high-tech industry will have to rethink what has become standard: the 12- to 16-hour workday.

Critics say that the promise of late nights and lots of travel make any hope of work/family balance a nightmare. "Realistically, 80-hour work weeks are standard," says Santiago Rodriguez, director of diversity at Microsoft Corp. "It makes it more difficult for anyone, but especially for women. Even in the most liberal families, the greatest weight of child rearing falls more on the woman than on the man."

4 There need to be training programs for women who are re-entering the work force after leaving to run their own businesses or raise their children.

"We have talented, experienced women out there who are looking to come back into the work force or are looking to change careers," says Scherr. With a little training, they're in there.

5 Companies need to make mentors available to women in the workplace.

— Sharon Gaudin



Microsoft's Santiago Rodriguez

ALL IS NOT LOST

The flip side of the IT labor shortage is that it's a buyers market for the few women who are in the industry or who are just coming into the work force, some say.

Some female techies say this is a great time to be in the field, simply because there is such a need. And — more so in the software industry than in hardware — there's an increasingly younger work force that's more accustomed to working with women.

"I believe I was one of the first five female technical producers at AOL," says Melissa St. John, who is now an account manager at America Online Digital City in New York. "I'm proud of my geekness."

She adds, "I think AOL is actively looking for women to fill positions, and there are no women applying for positions as they open. I think women are in a good position right now to bargain for jobs."

Jack Bagley, vice president of external relations at Battelle Memorial Institute, a nonprofit research and development organization in Columbus, Ohio, says women are in a better position in today's IT job market than men.

"They're a hot commodity," Bagley says. "Women are being recruited and stolen and promoted because companies want to diversify. Companies are recruiting them like athletes before they get out of school."

Battelle contracts with the federal government, which expects diversity in hiring.

When it comes to managing high-traffic Web servers, log file analysis tools go only so far. They can reveal your top 40 pages or tell you how many visitors looked at this or that. But the tools can't help you understand what those visitors did as they traveled between pages. And they certainly can't tell you anything specific about those users, such as their shopping histories, browsing habits or information needs.

To truly understand your users and your e-business, not just your site, you need a real-time Web analysis tool. These tools let you watch your Web traffic as it crosses the wire, peer inside Secure Sockets Layer (SSL) packets, decipher dynamic URLs and track cookies. They also let you monitor millions of hits per day across distributed servers and then funnel that traffic into a data warehouse, from which users can perform ad-hoc queries or run predefined reports. Eschewing flat-file log analysis techniques, these real-time traffic watchers post data within relational or object-relational database management systems. The result is that the products can answer questions such as, "What sequence of pages do my customers navigate before purchasing Product A?" or "What effect has my marketing campaign had on product sales?"

We invited every vendor we could

Tracking the Web in real time

Andromedia's Aria Enterprise and net.Genesis' net.Analysis raise the bar for high-end Web traffic analysis but fall short when it comes to administration.

BY BRADLEY SHIMMIN

together log files and real-time data helped us make informed business decisions.

Accrue Insight and Marketwave Hit List Live, two competitors in this market, declined to be reviewed. Accrue just acquired Marketwave and intends to integrate the products, leaving neither fit for review right now, according to the company.

at specific intervals. Aria comes with two features capable of continuously monitoring a Web server — directly through a server plug-in or indirectly through a server monitor.

The only drawback to Aria's overall approach is that it doesn't work well with log file data. With net-

Analysis, when we lost data due to a miscommunication between the monitor and recorder, we were able to repair the hole by stitching in data from the Web server's log file. With Aria, however, no such repair is possible.

Conversely, net-

Analysis can't see inside SSL packets with its network monitor. The product must rely on log file batch imports to get at encrypted data. Aria's server plug-in sees the SSL traffic at the server before it is encrypted. This ability allows you to gather information from your secure sites not normally found within log files, such as page titles and query strings.

The one feature that most differentiates these high-end Web analysis tools from their log-file dependent counterparts is support for a central data store. Here, as elsewhere, our test products diverged philosophically from each other. Net.Analysis requires existing support from Oracle 7X, Microsoft SQL Server 7 or Sybase's Adaptive Server Enterprise Version 11.5. Aria comes equipped

with a built-in database, Object Design's ObjectStore 5.1.0.

According to Andromedia, Aria's built-in, object-oriented database is superior in performance and scalability to relational databases such as SQL Server. Each unique user and Web page is stored in the ObjectStore server as an individual object. Proponents of the object-oriented approach claim this allows you to create multidimensional relationships on the fly. Relational databases, on the other hand, must generate multiple indexes before fulfilling many-to-many relationship queries. Net.Analysis running on an Oracle server rests between these two ends of the spectrum, using content aggregates (complex indexes), which are left in place as long as they are needed.

Discussion over the best approach is a debate best left to database manufacturers. Our testing did not reveal any outstanding performance benefits with the ObjectStore product. ObjectStore and our Oracle 7X database servers were able to return a month's worth of hourly data in less than 30 seconds. And we're talking about a large volume of data — assuming an average visitor reads five pages and each page has five images, our test site supported 133,000 unique visitors per day. That's approximately 3.9 million unique visitors per month — on par with sites such as ESPN.com and Barnesandnoble.com, both of which garnered just over four million unique visitors per day during the month of September, according to Media Metrix.

Each product's database strategy forces compromises. Net.Analysis affords the most flexibility. You can easily and automatically import data from disparate sources, such as your site's user authentication database. Moreover, your IT department won't have to invest in a new database technology, assuming you employ a database administrator knowledgeable in Oracle, Microsoft and Sybase. If not, you'll have to hire staff to support net.Analysis.

Aria's object-based database, on the other hand, appears as a black box, closed off from outside data and database administrators alike. True, this all-in-one approach makes the installation process much easier — all we had to do was format a few drives to be used in Unix's raw file system; Aria took care of the rest without the need for our intervention. (If only Oracle installations were so easy.) Also, unlike net.Analysis, the Aria database engine requires little ongoing maintenance. If a data table grows too large, the Aria software takes care of

ScoreCard

	Reporting 35%	Manageability 20%	Flexibility 20%	Performance 15%	Support 10%	Total score
net.Analysis	8	4	7	7	8	6.85
Aria Enterprise	6	4	6	8	8	6.10

Individual category scores are based on a scale of 1 to 10. Percentages are the weight given each category in determining the total score.

find that handles real-time Web server analysis to participate in our tests. We found Andromedia's Aria Enterprise 3.01 and net.Genesis' net.Analysis 4.5 capable of handling even the largest Web environment. The products deliver the goods when it comes to gathering and massaging huge amounts of data.

Overall, we found Aria to be the more robust and high-powered of the two. It withstood network outages and traffic bursts admirably. Its real-time SSL decoding and on-demand reporting were extremely effective and fast. However, for reporting flexibility and data interoperability, net.Analysis was without equal. Its drill-down reports allowed us to answer even unanticipated questions, and its ability to stitch

Data disparities

While both products gather Web data in real time, they do so very differently. Net.Analysis focuses on data correlation and brings data in from widespread sources — log files, real-time Web traffic, application data and even Open Database Connectivity (ODBC) data stores. Aria primarily focuses on pouring real-time data into a third-party multidimensional database. Through additional modules, such as the Application Monitor, Aria can also pull real-time data from sources such as Netscape Application Server and BroadVision's One-to-One Commerce application.

Net.Analysis comes with a network monitor and log file import utilities, which pull data in near real-time or

it. However, we had a great deal of trouble monitoring the ObjectStore database. In order to keep an eye on its health and disk space utilization, we had to relearn a number of file system commands. Because the raw file system doesn't recognize standard shell commands, ObjectStore comes with its own set of command-line utilities.

To conserve disk space, these products by default refrain from committing extraneous information to disk. If you want to watch a series of ad campaigns, for example, you'll need to tell each product to leave the relevant images out of the filtering process. Also, both products archive or delete aging data. Aria, for example, removes hourly data after seven days. This means that when you run an hourly traffic drill-down report on aging data, you may see only daily data. Score one here for traditional log file analyzers, which store data indefinitely.

A window on your Web server

Data availability aside, we were pleased with the depth of data analysis available with both products. We could create custom reports and easily drill down through standard reports to view increasingly finer slices of the available data.

Aria's browser-based PersonalAria reporter let us drill down through a page to find the distribution of hits over time for users exiting the site from that page. But Aria's reporting magic halted there. Although it comes with a number of prebuilt

drill-down reports, such as exit pages, hits objects, unique visitors and visits over time, the product really only let us view varying time frames for various reports.

The level of reporting employed by net.Analysis blows the doors off Andromedia's product. The reason is simple: the net.Analysis reporter is a Windows application that plugs directly into a relational database, such as Oracle. With net.Analysis, each report appears as a data table and a graph, upon which you can perform useful analysis, such as a best fit curve, average and standard deviation.

For any given report, net.Analysis can drill down to a large number of loosely related subreports, not just different time slices of the same report. For example, from a report on site errors, we could focus on what types of errors occurred during a given time period. From that report, we could drill down to see what percentage of the erroneous traffic stemmed from 404 (page missing) errors. And from that report, we could find out the pages generating the most 404 errors. Finally, by drilling down yet again, we were able to find the top internal and external pages that were referring people to our missing page.

Both products allow you to create content categories, which are collections of Web pages, forms and creative material. All you have to do is define a URL or page content filter by specifying wild cards within URL specifications. Aria allows you to

Product features in a nutshell

	net.Analysis 4.5	Aria Enterprise 3.01
Data store	Requires Oracle 7X, Microsoft SQL Server 7 or Sybase Adaptive Server Enterprise Version 11.5	Comes with Object Design ObjectStore
Data collection	Network packet monitor watches traffic noninvasively. Log monitor imports data synchronously.	Network packet monitor watches traffic noninvasively. Server plug-in monitors traffic directly.
Reporter	Web-based report generator plus Win32 data analysis application	Web-based report generator
Advanced content support	SSL through log files, dynamic URLs, cookies	SSL directly, dynamic URLs, cookies
Data availability	Hourly	Hourly or on demand
Reports	150 built-in, customizable reports	36 built-in reports, customizable by date range
Multiuser reporting	User profile/security, intranet reporting sites	User profile/security
Drill-down reports	Multilevel, dynamic, report-specific drill-downs for each report	Daily, weekly and monthly trends for each report

place value upon pages based on multiple user categories. For example, you can tell the product to value visitors who sign up for Service B after visiting Page A. You can then drill down through the resulting report to get information about these valuable visitors.

With net.Analysis, as with Aria, we could place value on a number of ad campaigns and run a report to see which users visited the site via those ads. But net.Analysis goes a step further by coordinating such value-based data with external resources. We could import data from an Excel spreadsheet via ODBC to visually evaluate which ad campaign was the most successful based upon dollars spent recruiting new customers.

Our biggest complaint about the Aria reporter, aside from its limited drill-down capability, is its focus on hits rather than page views. Advertisers don't want to know how many hits your site received because they vary greatly from page to page. They want to know how many page views and unique visitors your site received. These two metrics were way down on Aria's list of reports. Andromedia provides integration services with each installation, so if you want page views and unique visits to hold sway over hits, you can instruct your integrator to modify the standard set of reports. But we think page views should be on top as a standard practice.

Our only complaints with the net.Analysis reporter stemmed from its hourly delay in data delivery. Unlike Aria, which could generate ad-hoc queries on the fly, net.Analysis had to wait for an hourly infusion of data. This is a drawback because net.Analysis reports truncate the data from the past hour. For example, if

you run an hourly report for page views, your last hour of the report will be skewed depending upon how close you are to the hourly mark — the closer you are to the beginning of the hour, the less reliable your results will be. This really throws a wrench into the works when you perform a statistical analysis of the resulting data, such as calculating a mean or standard deviation over 30 days of site visits.

One thing we really liked about the reporting capabilities of these products is their support for a broader audience. Unlike most Web analysis tools, which simply blast the same set of reports to all concerned parties, Aria and net.Analysis can accommodate custom user profiles. You can create a profile for each user. Users then log on to the product's reporter securely — PersonalAria users over the Web and net.Analysis users from a Windows platform.

Net.Analysis takes individualized reporting one step further by creating a reporting intranet. Called Report-Site, this feature lets you create password-protected Web sites containing specified reports, which may be run daily, weekly or monthly. Because users hit a static Web site instead of a relational database, you can serve a wide audience without securing and scaling the database to meet the needs of multiple users.

In order to deflect Aria users looking for drill-down data away from the database, you must export query results to a delimited file or Web page and publish those results manually — a clearly inferior approach.

To simplify the process of identifying unique visitors, net.Analysis relies on browser environmental variables. This works well because it is noninvasive; clients don't

NetResults

net.Analysis 4.5

net.Genesis

(800) 982-6351, (617) 665-9200

www.netgen.com/products/analysis.html

Pricing starts at **\$15,000** for Unix and **\$11,500** for NT. For a midsize single-server installation, users can expect to pay approximately **\$28,000**, including integration support

Pros

- Extensive set of prebuilt reports
- Support for heterogeneous data
- Open database architecture
- Rich drill-down capabilities

Cons

- Limited server management tools
- Reporting lag time
- Vulnerable data collection method
- DBA expertise required

Aria Enterprise 3.01

Andromedia

(800) 700-3282, (415) 365-6700

www.andromedia.com/products/enterprise/index.html

Pricing starts at **\$30,895** for a single server. Additional servers retail for **\$2,500**, and additional report sets cost **\$1,000** each

Pros

- Reliable data collection method
- Built-in data store
- Strong SSL support
- On-demand data availability

Cons

- Hit-centric reporting
- Proprietary database architecture
- Limited server management tools

know they're being tracked. But it can report incongruous results if your site uses Java applets because the applets send back their own browser-like variables, which can masquerade as site visitors, inflating the number of actual visitors dramatically. Net.Analysis can also make use of existing site authentication routines, such as htaccess, to track unique visitors.

Aria's server monitor, which attaches itself directly to a Web server via an API, sets cookies to track unique visits. This method is extremely accurate, but depends on users' acceptance of cookies. Also, if you've got two servers on the same domain, the cookie server will only return one visit, even if the user traverses both servers.

Real time, real risks

While their reporting tools were good, our major complaints with these products were with their complexity and limited management tools. Each product acts as a client/server application and data warehouse server, yet neither comes with the tools necessary to keep the application or server running smoothly.

Both products are difficult to administer due to their reliance on interdependent yet distributed system processes. Both products use a similar architecture. A monitor application sniffs Web traffic at the source, storing that information in a temporary log file. A recorder application uploads the data to the database engine. Finally, a reporter application serves up the resulting data.

All four pieces (monitor, recorder, database and reporter) can reside on different machines. If you have a cluster of Web servers spread across two subnets, you can install the monitor on each target Web server and then place the recorder on its own centralized server. It takes in and coordinates all data from the target servers, conducting reverse Domain Name System lookups and calculating unique visitors before writing the data to the database.

One serious caveat to this approach is

network performance. Both products pass data for each hit from one machine to another in real time. In our test environment, this gobbled up 20% of the available bandwidth on our Fast Ethernet segment.

Imagine what this could do to your wide-area link. For such a situation, Aria provides an interesting workaround. Instead of sending data in a stream, the monitor can compress the data and send it over in batches.

This architecture allows you to record and integrate data from Web servers spread across disparate locations and makes for great scalability. In our performance tests, we were unable to crash the recorder for either application. Our target Web servers (a Sun Ultra 10 and a Dell dual Pentium) cried uncle long before either product showed any signs of slowing.

And yet, neither product comes with a management console through which you can monitor the health of the various processes. We relied on standard Unix tools to watch log files and monitor system processes to make sure that each of the four pieces was functioning properly. When the Java Servlet engine used by PersonalAria failed, we had to work backwards from the reporter, resorting to logical deduction to track down the problem.

Net.Analysis did give us a great Web interface through which we could manage our data sets within the database management system, while Aria comes with its own Web-based log file monitor. Both products can e-mail problem announcements, but they're no better than an "idiot light" on the dashboard of a car, telling you that the steam you see billowing out of your hood is the result of a problem with your engine. Future versions of these products should come with support for SNMP Management Information Bases at a minimum, to allow administrators to use traditional IT management tools to raise the white flag in times of trouble.

Why are we dwelling on management drawbacks? Unlike log-file analysis tools, real-time Web

SUPPORT AT HAND

Net.Genesis and Andromedia acknowledge the inherent complexities of their products, and provide full pre- and post-installation integration services. Even before you issue a purchase order, the companies begin evaluating your analysis requirements, helping you to identify monitoring and reporting needs.

If you don't see a desired report, for example, your integration consultant will write one for you. Likewise, if you need to watch disparate Web content as though it were a single entity (as with a marketing campaign), the consultants will help you set up filters that automatically group Web pages, ads or images under one umbrella.

Similarly, the companies can help you define data collection procedures and choose whether to filter out specific data types, such as images or audio files. More importantly, they can ensure that the product adheres to your definition of a unique visitor by reviewing your current site traffic. One false move here (assigning one IP address per user, returning via an external reference or time onsite), and you could incorrectly represent the number of unique visitors — something that advertisers and sponsors frown upon.

This level of product integration means you won't have to endure any installation woes. Company technicians ensure that you have the required hardware; then show up at your doorstep, ready to install and configure your product. But brace yourself. These products exact some serious computing muscle. You'll need a dual-processor (Reduced Instruction Set Computing or Pentium class) machine with 1G byte of RAM and at least 10G bytes of disk space (preferably in a RAID configuration) just to run the database server. The larger your site, the more machine you'll need.

Given the complex nature of these products, we were glad to have on-site support. With Andromedia's Aria, for instance, the company's technician was able to work around a known, yet obscure, bug in the install script that reversed the push/pull relationship between the monitor and recorder applications. Even with release notes, diagnosing and resolving this problem would have been a nightmare.

monitoring tools establish a stream of data between the Web server and the database engine. If you sever that stream, you can lose data.

To see how net.Analysis and Aria handled a disconnect between monitor and recorder, we severed and then re-established their networked connection. Aria's recorder immediately wrote all pending data to disk, and its monitor continued to write Web data to a temporary log file on the target server. When we reconnected the two, the entire temporary log file made its way to the recorder, where it was rectified with data in the database.

Net.Analysis experienced some problems in re-establishing its connection. Instead of resending all the data in the monitor's log file, it tried to synchronize the log file with the remaining data in the recorder. In doing so, it hung, forcing us to delete the log file and restart the system. This left us with a hole in our data timeline. We also ran into trouble restarting net.Analysis' many

components. If we started the recorder before the monitor, the monitor would fail to start.

If you need to monitor your SSL-enabled server in real time (directly or over the network), Andromedia's Aria Enterprise 3.01 is the better choice. It can handle anything you throw at it without a hitch. However, if you need flexibility, data interoperability and in-depth reporting, and you don't mind a one-hour delay in your data, net.Genesis' net.Analysis 4.5 will meet your needs perfectly. Either way, these products will take your Web monitoring light years beyond traditional log file analysis and allow you to at last place business and network requirements on an even plane.

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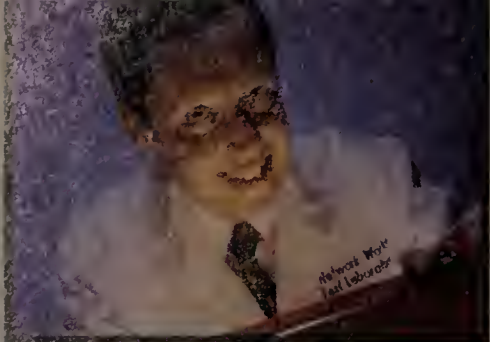
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Cool Tools

Quick takes on high-tech toys

Lee Schlesinger, Technology Editor

THE MAGIC PHONE

Give away the hardware and sell the service. It's a business model that's become popular in many places.

Imagitel brings this business model to telephony: It gives away the Millennium Phone, a compact handset manufactured expressly for Imagitel

that you can use at home, at work or on the road, anywhere you have an available jack. With it, you never have to dial 10-10 access numbers or calling card

numbers. You just dial the local or long-distance number you're calling. An embedded microprocessor in the Millennium Phone automatically dials an Imagitel platform behind the scenes, then feeds it the number you dialed. Imagitel determines how to route the call.

It's a bit disconcerting to hear the phone generating tones when you know you haven't pressed so many buttons, but I could get used to that pretty quickly if I knew I was saving money on every call.

Unfortunately, I wasn't. Imagitel's rates are high — 9.9 cents per minute for long-distance calls from home, and 19.9 cents per minute for calls from hotels. By contrast, we pay about seven cents at the office and 11 cents with a company calling card, plus a 30-cent charge for every calling card call.

Were this rate etched in stone, the product would get a pan. Fortunately, Imagitel is about to implement a program through which they'll match or beat your existing service's calling card rates.

If Imagitel provides a competitive rate, then the chief benefit of the Millennium Phone is convenience — you have fewer digits to dial. That convenience, however, is more than counterbalanced by the bother of having to carry around the phone itself. While it's a very attractive phone — housed in transparent blue plastic with a mouthpiece that flips down at the touch of a button like an old Star Trek communicator — it's a bit larger than a typical cellular phone.

And speaking of cell phones, how does the Millennium Phone stack up as an alternative? Not that well. You don't need a jack and a wire to use a cell phone, and today's cellular rate plans compare favorably to the Millennium Phone's. Finally, you can receive calls on your cell phone anywhere. The Millennium Phone will ring anywhere you plug it in, but only at the number assigned to that location.

But the Millennium Phone has one more innovative feature that might sway your decision — a second jack that you can use to connect to a modem (or a Caller ID box or answering machine). That makes it convenient for you to make data calls without adding a calling card number to your dialing software.

Still, I think I'd choose the untethered option — at least until the electromagnetic emissions from the cell phone antenna cook my brain. Hmm, on the other hand ...

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David Hill, Senior Analyst, Storage and Storage Management, Aberdeen Group

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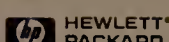
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Bottom line: An attractive and cleverly engineered phone, but cellular may be a better way to go.

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Management Strategies

Career Development, Project Management, Business Justification

Maintaining momentum

Network professionals let you in on their secrets to project management success.

BY LAUREN GIBBONS PAUL

What's the difference between projects that fail and those that succeed? According to veteran project manager Ed Esposito, it boils down to the difference between traditional project management, which focuses on administrative tasks, and proactive project management, which is about mitigating risk.

"With traditional project management, you make a formal project plan and then have a lot of meetings to report status. Proactive project management always looks out to future milestones, identifies the risks and puts together a contingency plan," says Esposito, director of IT services for health insurance firm Blue Cross/Blue Shield of Massachusetts in Boston.

Esposito should know. His group has just finished a complex network upgrade on time and on budget. With the help of outsourcer Inacom of Omaha, Neb., the 20-person team upgraded a Fast Ethernet LAN to a mixture of Gigabit Ethernet and SONET and replaced the Hewlett-Packard OpenMail system with Microsoft Exchange. What's more, the company rolled out 3,500 new PCs as part of a standardization effort. With the LAN upgrade complete, the company is ready for the next step of NextGenBlue, a massive enterprisewide network overhaul to support emerging business applications.

The basics of good project management are well known: Get buy-in from management and users, communicate project goals, set a critical path, manage

deviations from that path, and above all, pray. But seasoned project pros also have a number of tricks up their sleeves to help keep their plans on track. Here are some of the best project management tips from the trenches:

- **Get help when you need it.** Like Blue Cross/Blue Shield, many companies attempt to mitigate risk by calling in an outsourcer to perform the upgrade while maintaining control of the overall project, says Steve Furman, vice president at Robbins-Gioia, a project management consulting firm in Alexandria, Va.

- **Train project management neophytes.** They need to learn how to set milestones, approach problems analytically and create contingency plans before they can take the reins for the first time, Furman says.

- **Pick the most user-friendly tool you can find.** Many project management packages are extremely robust and are designed to handle multiyear software development projects. If you're in charge of a simple network upgrade, you won't need — or want — that degree of power.

At Blue Cross/Blue Shield, Linda Murawski used Microsoft Project 98 to keep on track. Although it's not yet Web-based, the tool is totally intuitive for Windows users, says Murawski, who is director of IT operations for the insurance company. And Project 98's dependency-management capability was critical for risk management. For example, the team was contractually obligated to finish upgrading its pharmacy management software prior to beginning the rest of the project. If the pharmacy rollout had not gone as planned, it would have affected the rest of the project.

- **Don't make people jump around.** In recent years, it has become popular to have team members work on whatever task was the highest priority at the time, changing tasks many times throughout the course of the project. This is the wrong way to go, Furman says. "The efficiency factor drops dramatically when people hop around."

Completing a long-term project requires each team member be singularly focused for long periods of time, he says. And that's exactly what Blue Cross/Blue Shield did. "We had assigned roles and responsibilities that held throughout the project," Murawski says. "It doesn't make sense to jump people with a particular skill level to where they may



Ed Esposito and Linda Murawski of Blue Cross/Blue Shield of Massachusetts finished a complex network upgrade on time and on budget.

not have the appropriate skills."

- **Involve suppliers early in project planning.** "We're seeing supply chain management becoming an integral part of the network upgrade project. Vendors have to be involved early on to ensure they can meet the needs of the project," Furman says. Blue Cross/Blue Shield's outsourcer ensured vendors could meet the deadlines well in advance.

- **Do estimates from the ground up.** Most projects have a budget and time line that was to some degree fixed by senior management. Don't just leave it at that, Furman says. Throughout the duration of the project, have all team members continually validate or adjust the dates. Otherwise, you'll be stuck with unrealistic goals.

- **Keep users involved every step of the way.** Esposito and Murawski involved key users from all of the business units in the planning stages. In addition, no segment of the project was considered finished until it had been tested and signed off on by those same users.

- **Focus on the good.** Pressed for time, most project managers manage their projects by exception reporting (i.e., "Tell me if something is wrong.") Enlightened project managers encourage their team members to discuss things that work and to share knowledge and best practices.

Paul is a freelance writer in Waban, Mass. She can be reached at laurenspaul@mediaone.net.

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Nov 29 - Ad Close: Nov 17
SNA gateway software review.

Dec 6 - Ad Close: Nov 24
**Buyer's Guide:
Ethernet backbone switches.**

**Distribution at
DCI's eBusiness World,
Chicago.**

Dec 13 - Ad Close: Dec 1
LDAP servers review.

Dec 20 - Ad Close: Dec 8
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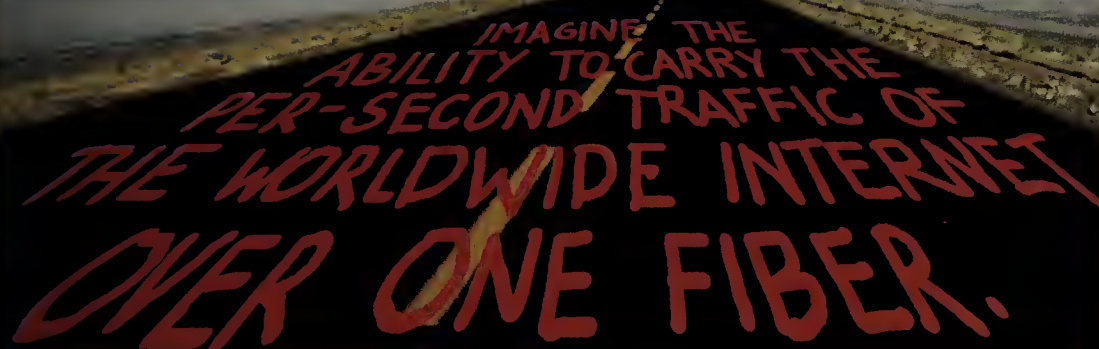
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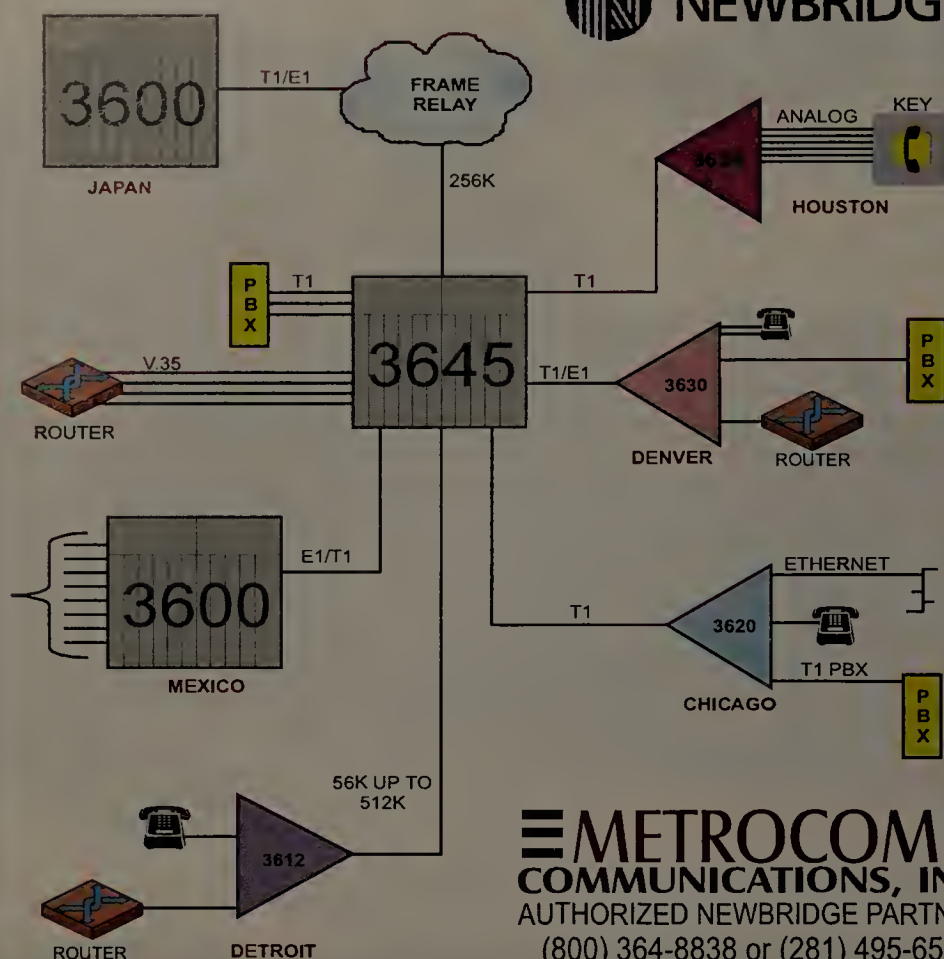
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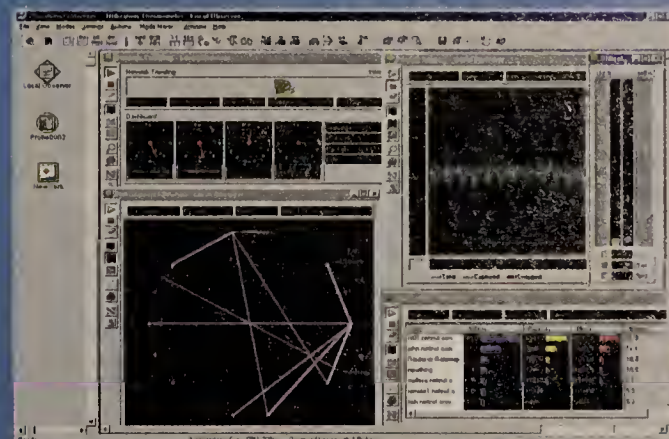
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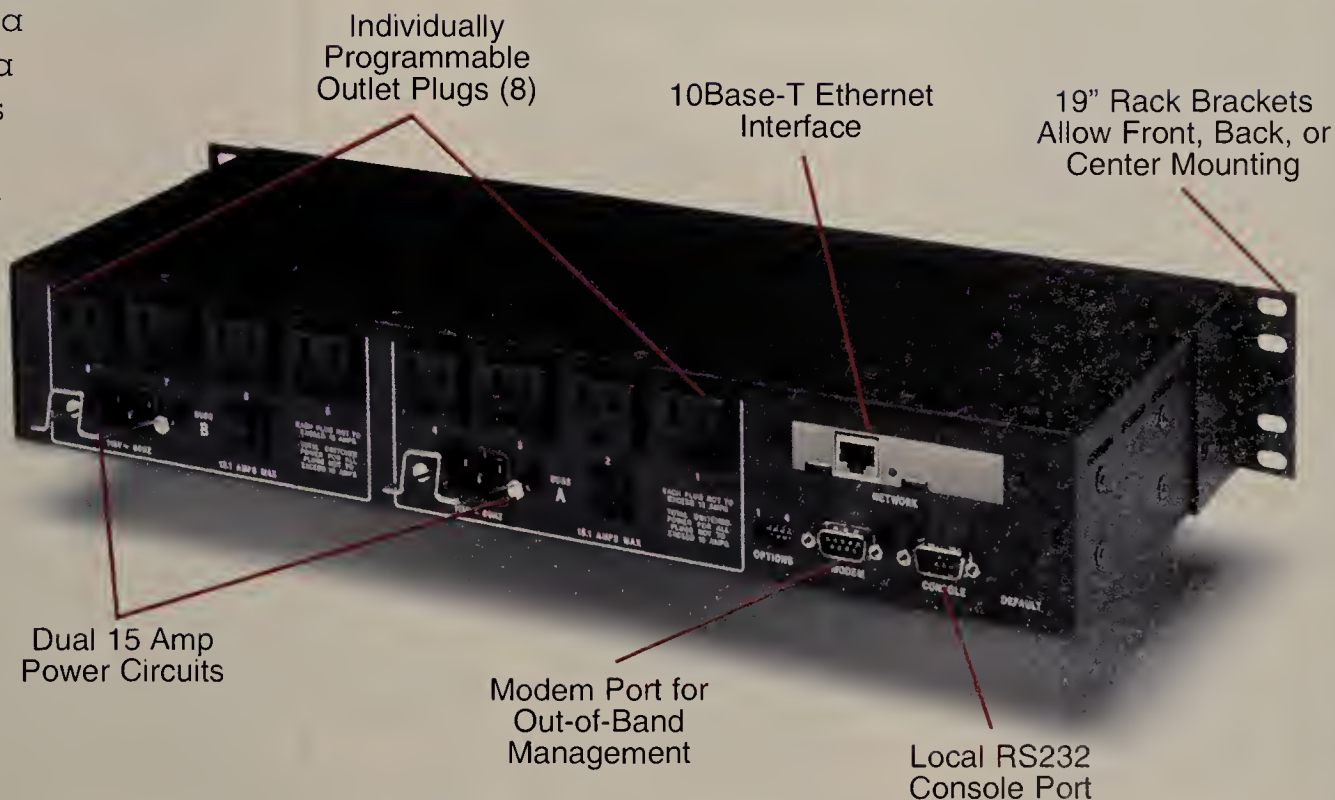
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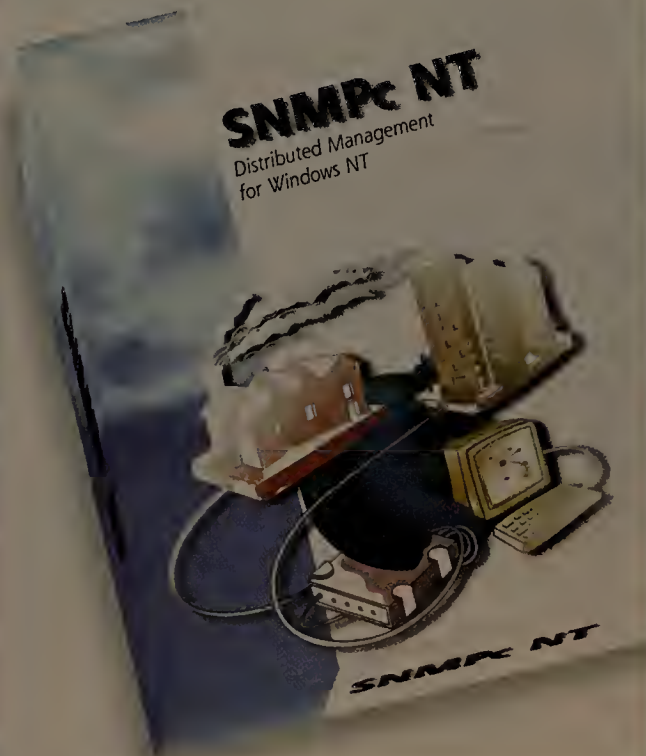
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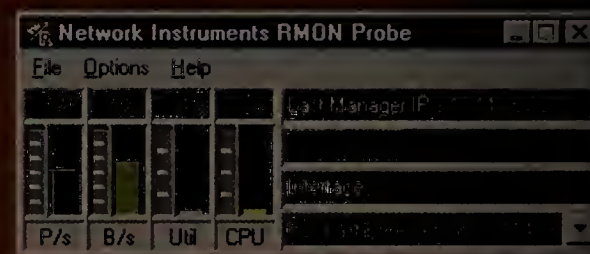


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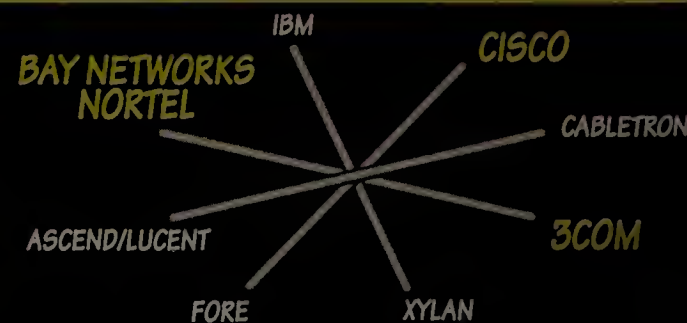


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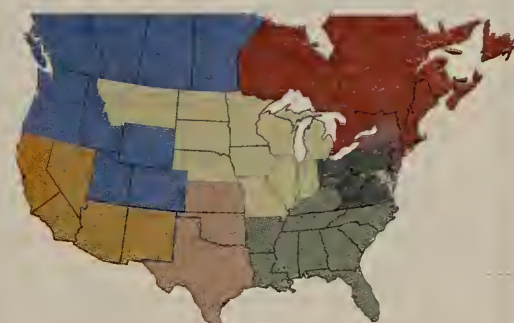
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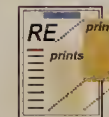


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ASPs,
continued from page 1

"The hardest thing about it is getting comfortable with the ASP model," he says.

It's easy to say that National Airlines in Las Vegas fully embraces the ASP business model simply because the airline outsources 50% of its applications. Tim Stanley, vice president of IS at National Airlines, says ASPs offer users real benefits, but users need to pay close attention to the details before signing on the dotted line.

Before you select an ASP you should visit the data center where your application servers will be hosted, Stanley says.

"You have to see where your family jewels will be held," he says.

Only a handful of ASPs are actually building their own data centers. The majority are collocating servers in other providers' data centers. This is why it's critical that customers see the size of the space where their servers will be housed, who has access to that space, how many other customers will be served from



Third in a four-part series.

sources your ASP has at its data center, but don't be satisfied by just seeing connectivity from three different providers. Be sure that your servers can be routed to these alternative bandwidth sources if there is a failure," Stanley says.

In addition, just because the lines are there, that doesn't mean your traffic will travel over them. "Some of these lessons we learned the hard way," Stanley says.

Knowing that an ASP's data center is sound is as important as choosing a corporate accounting application. But knowing that an ASP has the required software experts in-house is also critical. Many users, such as Fleetwood Retail, a Houston manufacturer of prefabricated homes, have decided to outsource the management of

application, says Don Palmour, vice president of technology at Fleetwood Retail.

By teaming with ASP Qwest Cyber.Solutions, Fleetwood Retail is receiving the attention that typically only large corporate customers get when they outsource, Palmour says. Qwest Cyber.Solutions has more SAP experts on hand than Fleetwood Retail could afford, he adds.

Users should also ask their ASPs how many application



McGill, director of sales and marketing systems at Rhythms NetConnections. McGill hired a Siebel Systems consultant who worked with Rhythms and USi through contract negotiations and full production.

"One of the reasons I'm outsourcing is because I'm not a Siebel expert, so we brought in an expert who asked all the right questions," he says.

If you hire a consultant or get a project leader within

expect to be at that level or higher within a certain time frame if your company is expecting significant growth, Stanley says. Most ASPs are pushing for five-year contracts, offering lower rates for longer periods, making it possible to reduce your monthly rate even more.

For Sunburst Hospitality, which has been working with USinternetworking since April, application and server performance was one of the

"When you bring up an application in 90 days, there are certain things you don't get out of the box, and one of those is performance."

Mark Elbaum, director of IS, Sunburst Hospitality

implementations they have under their belts, along with customer references.

"Be sure you know how much experience the ASP has in providing the solution you're looking at buying. A one-time implementation doesn't mean they'll be successful the second time," says Terry Hucks, chief information officer at Heilig-Meyers, a manufacturer of home furnishings in Richmond, Va.

Heilig-Meyers is working with ASP Ciber Enterprise Outsourcing to bring its enterprise resource planning (ERP) software suite online. Knowing how often an ASP has set up an ERP application, such as Lawson, is required information, Hucks says, but business users shouldn't solely rely on their ASPs.

There's no replacement for having the right person in-house to lead the project, Hucks says.

Many business users who have teamed with ASPs have also designated someone from their organizations as the lead liaison between their ASPs and the company. Still, other users go outside of their companies for those needs.

Rhythms NetConnections, a USinternetworking customer, drafted a consultant to get its customer relationship management ASP services up to speed.

"Hire your own expert to keep them honest," says Peter

your organization who is also savvy at the bargaining table, you may be able to save your company a few dollars, as well.

"One of the big reasons you go with an ASP model is to get breaks on licensing fees," National Airline's Stanley says. "When negotiating your contract, find out when the volume discounts kick in."

Typically, the more users you sign up for a service, the lower your monthly user rate will be. When an ASP provides you with the price for the number of users you have now, find out how many more users you need to add to get a discount.

Once you have that figure you can use it in your negotiations by stating that you

company's biggest concerns once they decided to go the ASP route, says Mark Elbaum, director of IS at the national hotel chain.

"When you bring up an application in 90 days, there are certain things you don't get out of the box, and one of those is performance," Elbaum says. Running an application such as PeopleSoft at an off-site data center, with 100 business units accessing it over a T-1, isn't the same as running it internally, Elbaum says. USinternetworking worked with Sunburst until its PeopleSoft Application was humming along. ■

ASP lessons learned

How should you deal with an ASP? Here's some advice from business users who have already taken the plunge:

Hosting facilities

- Tour your ASP's data center facilities to see where servers and applications will be hosted. Talk to the people who will man these servers.
- Be sure that your servers can be routed to alternative bandwidth sources. Look at the level of connectivity your ASP has at its data center. Does it have multiple communication sources?

Software issues

- Make sure you are covered for all large and small software upgrades and patches.
- Ask your ASP about its ability to integrate your existing applications with new customer relationship management or ERP systems in the future.

Implantation tips

- Don't do too much at once. Companies with staffs that max out at 50 people should try to only implement a couple of software modules at a time when deploying an ERP application.
- Hire your own expert who knows the system you are leasing in order to keep your ASP honest.
- Make sure your ASP is experienced. One successful one-time installation doesn't guarantee a second.

that data center and who will be watching over their servers, Stanley says.

If the server hosting area is satisfactory, the next consideration to ask about is bandwidth.

"Look at what level of connectivity from multiple

their SAP applications because the company didn't see how it could hire and retain three or four SAP experts.

It's important to meet with the software engineers at your potential ASP partner so you can feel comfortable with their ability to handle your

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Who are you? (take a cookie)

The Caterpillar and Alice looked at each other for some time in silence. At last the Caterpillar took the hookah out of its mouth and addressed her in a languid, sleepy voice. "Who are YOU?" said the Caterpillar. This was not an encouraging opening for a conversation.

— *Alice's Adventures in Wonderland*
by Lewis Carroll

By now, you must all know about online profiling, the practice of aggregating information about people's online behavior to generate a profile of each consumer's preferences. Some of this profiling is done through the amazingly misunderstood Web technology

called cookies, used to identify and track Web browsers.

The most important part of the profiling process is taking information gathered as users interact with a Web site (such as where users go and what they reveal about themselves when asked) and possibly merging it with information from

other sources (credit profiles and so on) to produce a profile.

While some profiling is solely for the purpose of being able to target Web site advertising at the user, that's not the entire story. I can now reveal that the full purpose of online profiling is to enable total world domination by a secret cabal of "black hat" government agencies under the direction of the world banking system. OK, I'm kidding.

The truth is that profiling happens to you every day offline as well as online. With nary a second thought, you go into Von's and let them swipe your Von's Club card. You have just left a data trail wide enough for them to drive a truck down sideways, direct to your front door loaded with special offers for your consideration.

Think about it: You swipe your gas cards, affinity cards and credit cards a dozen times each week. Just because you don't bother to

find out what companies do with the data doesn't mean that they aren't slicing and dicing it a dozen ways to your next purchase. But do you worry? Unless you are very paranoid, the answer will most likely be not much, if at all. And should we worry? Probably. Although to worry presumes a lot about how effective companies are at using the derived data.

Once again, the big bad bogeyman of the Internet has become the target for the politicians. On Nov. 8 the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce and the Federal Trade Commission held a public workshop on online profiling (www.ntia.doc.gov/ntiahome/privacy/index.html).

At the workshop, all the big online advertising agencies — including AdKnowledge, AdForce, DoubleClick, Engage, Flycast, MatchLogic, 24/7 Media and Real Media — said they would do something about the issue by creating a site (www.networkadvertising.org) to educate consumers about the industry's attempts to self-regulate. 'Scuse me if I'm not over excited about this.

Of course, these responsible organizations — which are loath to have their wings clipped by the government — are the tip of the virtual iceberg. There are tens of thousands of other sites that tag your browser with a cookie and then attempt to track you and your behavior in a lot more intrusive ways than the big boys.

I don't have any problem with the use of online profiling being tightened, but we're missing the bigger picture here. The real issue is profiling in general, in the real and virtual worlds.

Once again, the government regulators and politicians are trying to turn the Internet into a controlled, measurable thing so they can pat themselves on the back and say "Well done, us." But will we all wake up and demand that such control be applied to the real world? Write to the NTIA. Demand that they focus on the bigger picture. Let them know who you are.

Identify yourself to nwcolumn@gibbs.com.



MARK
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The latest on the
Internet/intranet industry

The typical top banana at a publicly traded Internet company makes "a relatively modest \$1.74 million" in direct compensation, according to a new survey by PricewaterhouseCoopers.

"Relatively modest" is a relative term, of course, but shed no tears for these CEOs. On average they also control a tidy 12.1% equity stake worth an eye-popping \$468.5 million. And while it is no revelation that stock options for upper managers have become the Pokémon cards of Internet employment incentives, the full scope of these inducements may not be understood by public stockholders.

An established technology company might have 15% to 20% of its shares under option, says Edward Speidel, who authored the report and has a title that's too long for my attention span. However, the Internet whippersnappers on average have about 23% of their shares under option and "upwards of 30%, if not higher than that" in some cases, he says.

"As these companies mature, they're understanding that they need to change their [option] granting practices," Speidel contends. "They need to tie the options more to performance, and it needs to become less of an entitlement."

Pay for performance: Now there's a foreign concept for the 'Net.

The PricewaterhouseCoopers survey did identify one type of Internet executive who may indeed be "relatively" underpaid: the company founder who remains CEO. Nonfounding CEOs earn just more than \$2 million on average, while founders draw roughly half that amount from the pay window.

"They actually are shortchanging themselves in some cases," Speidel says. "We've had to try to convince founders that as their company matures and they're now part of a senior management team, they don't want their own cash compensation or long-term incentive grants to be a cap for other senior managers as they recruit people. That's a real problem."

So go ahead founders, give yourself a big fat raise. Do it for the good of the team.

Someone help me out here. Please tell me why state and even local lawmakers are huffing and puffing to stop banks from charging fees to noncustomers who use their ATMs. Granted, getting something for nothing is always better than paying for that something, and politicians love being on the side of free stuff. But I'm at a loss to understand why consumers believe they have any claim at all to the use of these ATMs — never mind free use — given that they don't otherwise do business with the machine's owner.

New York's City Council is the latest to leap on this red herring of a consumer issue. Here's the rationale from one councilor (with "double-dip" referencing the fact customers often pay their own bank a fee as well when tapping into a different bank's ATM):

"Banks who charge excessive fees and double-dip are anti-consumer," intones City Council speaker Peter Vallone in a statement. "The financial capital of the world will not tolerate this kind of abuse. . . . Nobody should have to pay \$2 or more for the privilege of withdrawing his or her own money."

Who in the name of Milburn Drysdale says anyone has to pay that fee? Use your own bank's ATM machines. And if that's inconvenient for whatever reason, pony up the two bucks and get on with your life. Jeepers-creepers, have we really gotten to the point in which cheap ATM access is some sort of constitutionally protected right?

Next thing you know these local politicians will be demanding that cable TV companies open up their networks to competing ISPs.

(Oh, in case you don't remember, Milburn Drysdale was the perpetually scheming banker on "The Beverly Hillbillies.")

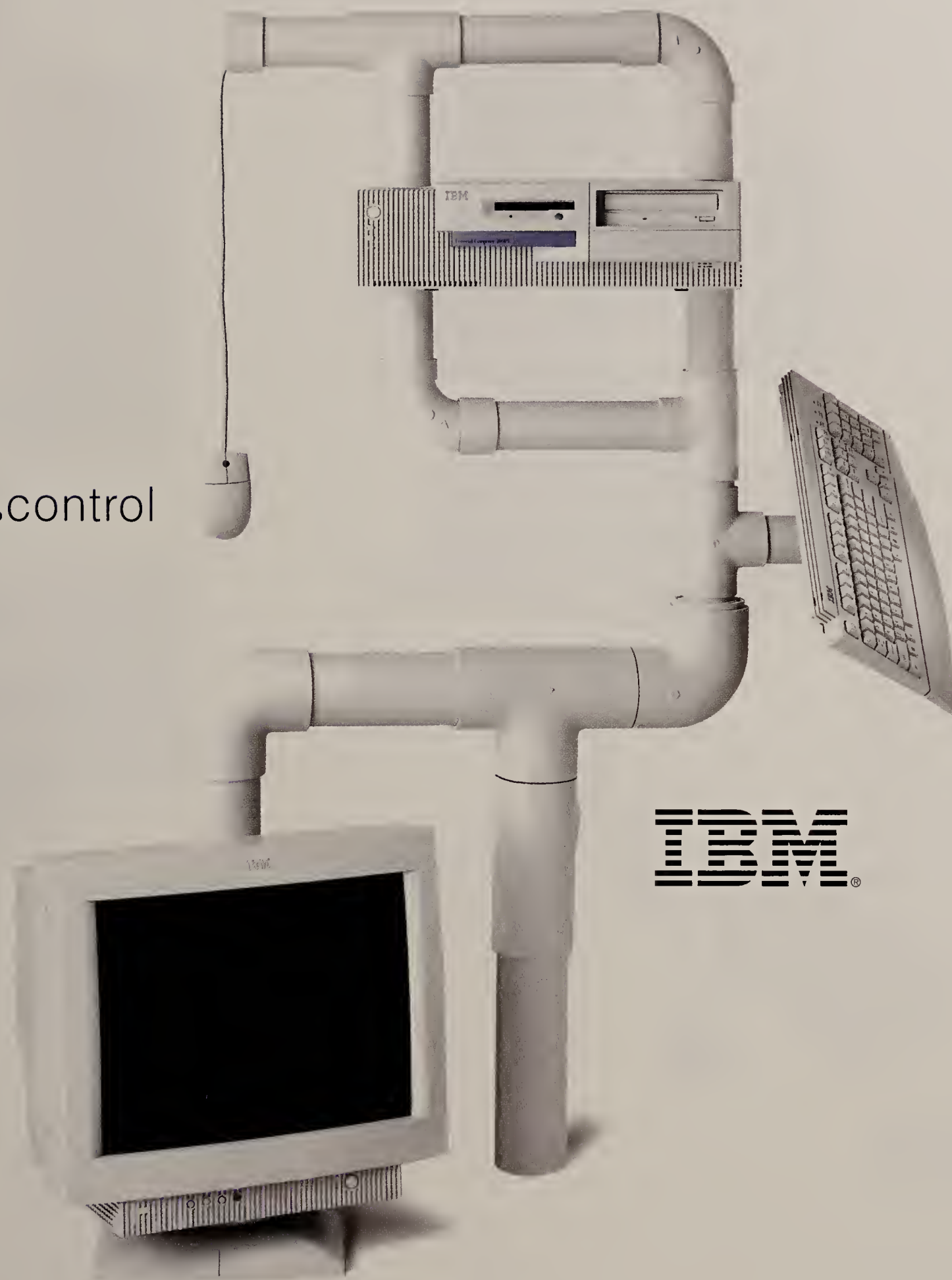
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